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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10

IN THE MATTER OF:)
SOUTH TACOMA FIELD OPERABLE UNIT) UNILATERAL ADMINISTRATIVE
OF THE COMMENCEMENT BAY SOUTH) ORDER FOR REMEDIAL DESIGN
TACOMA CHANNEL SUPERFUND SITE,) AND REMEDIAL ACTION.
TACOMA, WASHINGTON.)

U.S. EPA Docket No.
10-96-0006-CERCLA

Burlington Northern and Santa Fe
Railway Company, BN Leasing
Corporation, Amsted Industries,
Tacoma Public Utilities,
Pioneer Builders Supply Company,
South Tacoma Limited Liability
Corporation, and Atlas Foundry,

Respondents.

Proceeding Under Section 106(a) of
the Comprehensive Environmental
Response, Compensation, and
Liability Act of 1980, as amended
(42 U.S.C. § 9606(a)).

ADMINISTRATIVE ORDER
FOR REMEDIAL DESIGN AND REMEDIAL ACTION

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REMEDIAL DESIGN AND REMEDIAL ACTION

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I. INTRODUCTION AND JURISDICTION

1. This Order directs the Burlington Northern and Santa Fe Railway Company ("BNSF"), BN Leasing Corporation ("BN"), Amsted Industries ("Amsted"), Tacoma Public Utilities ("TPU"), Pioneer Builders Supply Company ("Pioneer"), the South Tacoma Limited Liability Corporation ("STLLC"), and Atlas Foundry ("Atlas") (collectively referred to as "Respondents") to perform a remedial design for the remedy described in the Record of Decision for the South Tacoma Field Operable Unit of the Commencement Bay South Tacoma Channel Superfund Site dated September 29, 1994, and to implement the design by performing a remedial action. This Order is issued to Respondents by the United States Environmental Protection Agency ("EPA") under the authority vested in the President of the United States by Section

1 106(a) of the Comprehensive Environmental Response, Compensation,
2 and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C.
3 9606(a). This authority was delegated to the Administrator of
4 EPA on January 23, 1987, by Executive Order 12580 (52 Fed. Reg. 2926,
5 January 29, 1987), and was further delegated to EPA Regional
6 Administrators on September 13, 1987, by EPA Delegation No. 14-14-B.
7 This authority has been further delegated by Regional Delegation
8 No. R10 1290.6 (April 8, 1987) to the Director of the Hazardous Waste
9 Division.

11 II. FINDINGS OF FACT

12 2. The South Tacoma Field Site (the "Facility" or the
13 "Site") is an operable unit of the Commencement Bay South Tacoma
14 Channel Superfund Site and encompasses roughly 260 acres located
15 from approximately South 36th Street on the north,
16 South 56th Street on the south, Tyler Way on the west, and Adams
17 and Washington Streets on the east in southwestern Tacoma,
18 Washington. The Site is located in a lowland area and is mostly
19 open fields of grass and other vegetation with a few industrial
20 and commercial facilities. The Site includes a filled in swamp
21 and lakebed which is now covered with grass and other vegetation.
22 A wetland/drainage channel is located near the western border of
23 the Site.

24 3. The Site was used for a variety of industrial
25 uses. From approximately 1892 until 1974, BNSF, through its
26 predecessors in interest, the Burlington Northern Railroad

1 Company and the Northern Pacific Railroad Company (collectively
2 referred to as "BNSF"), used the Site for building, repairing and
3 maintaining rail cars. These operations were conducted on over
4 200 of the Site's 260 acres, and included the following: a clean
5 out operation where rail cars were cleaned prior to repair or
6 maintenance; a locomotive blacksmith shop where locomotives were
7 painted and steel was fabricated; an operation where rail cars
8 were painted and varnished; a caboose cleaning area; a large
9 paint shop; a dismantling area; and a burn pit. Many of the shop
10 floors reportedly had dirt floors and releases most likely
11 occurred during the cleaning, repairing and refabricating that
12 took place in and around these structures. These operations
13 generated a variety of waste streams from discarded paints,
14 solvents, oils, greases, metals, and asbestos. Waste generated
15 by these operations were washed directly into the ground, burned,
16 and/or used as fill materials throughout the Site. Sampling
17 undertaken during the Remedial Investigation ("RI") revealed that
18 Site contamination is often located in the areas where these
19 former operations occurred.

20 4. Amsted, directly and/or through its predecessor in
21 interest, the Griffin Wheel Company, operated a brass foundry
22 from 1897 until 1980 and an iron foundry from 1897 until 1957 on
23 the Site. The iron foundry was used to produce iron wheels. The
24 brass foundry was primarily used for the production of journal
25 bearings. The bearings were made by recasting used bearings and
26 casting raw materials into bearings. The brass material used to

1 manufacture the bearings was composed of lead, tin, copper and
2 zinc. First, used bearings were melted down and then lead, tin
3 and zinc were added to bring the brass up to railroad alloy
4 specifications (lead 16-24%, tin 5-7%, copper 67-77% and zinc
5 4%). Studies of lead levels in the air inside the foundry
6 conducted between 1952-1953 found that air lead levels exceeded
7 the maximum allowable concentrations established by Washington
8 State law. Amsted used little or no emission control technology
9 to reduce stack emissions from the brass foundry until a baghouse
10 was installed in 1972 to collect particulate matter in the
11 exhausts from the various processes. Amsted operated the brass
12 foundry without the baghouse for approximately 75 years. The
13 baghouse would have reduced but not have eliminated contaminated
14 air emissions. Given that air emissions from the brass foundry
15 were subject to wind dispersion after stack emission, it is
16 probable that these emissions caused soil contamination
17 throughout the Site. Baghouse dust was spread on the ground west
18 of the foundry building. Slag and tailings from the foundry
19 operations were also deposited on the west side of the foundry.
20 Amsted has sold portions of the Site and the STLLC currently owns
21 portions of the Site previously owned by Amsted.

22 5. Atlas Foundry operated a foundry off-Site and
23 disposed of foundry wastes including slag and waste sand in the
24 swamp and lakebed area of the Site. Atlas purportedly had an
25 agreement with BNSF to dump their waste material at the Site from
26
27

1 at least 1968-1980. The slag and sand contained lead and other
2 heavy metals.

3 6. TPU provides electric service and fresh water
4 supply for the City of Tacoma. TPU operated an electrical repair
5 and service facility on the north end of the Site since 1953.
6 Electrical transformers which contained polychlorinated biphenyls
7 (PCBs) were stored at this location. PCBs have been found at
8 levels of concern in the transformer storage area and dry wells
9 on the TPU property.

10 7. Pioneer is a roofing supply company that purchased
11 property at the Site from BNSF in 1987. After the purchase
12 Pioneer installed underground storage tanks on the subject
13 property. Pioneer's tanks were removed in 1990 and during the
14 removal, contaminated soil was discovered. Additionally, some
15 old BNSF tanks were removed from Pioneer's property during the RI
16 and more extensive soil and groundwater contamination was
17 discovered. Groundwater in this area is contaminated by benzene,
18 toluene, ethyl benzene, xylenes, and 1,1,2 trichloroethane.

19 8. A. BNSF, BN, Amsted, TPU, Pioneer, and STLLC
20 currently own property within the Site.

21 B. BNSF, through its predecessors in interest
22 was, from approximately 1892 until 1974, an owner
23 and operator at the Site. During that approximate
24 time period, hazardous substances, including some
25 or all of those described in this Section, were
26 disposed of at the Site. Amsted was from

1 approximately 1897 until 1980 an owner and
2 operator at the Site. During that time, hazardous
3 substances, including some or all of those
4 described in this Section, were disposed of at the
5 Site.

6 C. Atlas and BNSF arranged, by contract,
7 agreement, or otherwise, for the disposal or
8 treatment of hazardous substances at the Site
9 which Atlas and BNSF respectively owned or
10 possessed. Hazardous substances of the same kind
11 as those owned or possessed by Atlas and BNSF are
12 present at the Site.

13 9. The parties identified in Paragraph 8 are
14 collectively referred to as "Respondents".

15 10. On September 8, 1983, (48 Fed. Reg. 40685),
16 pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed
17 the Commencement Bay South Tacoma Channel Site on the National
18 Priorities List ("NPL"), set forth at 40 C.F.R. Part 300,
19 Appendix B. Shortly after it was listed on the NPL, the
20 Commencement Bay South Tacoma Channel Site was divided into three
21 non-contiguous operable units: the South Tacoma Field Site; the
22 Tacoma Landfill Site; and the City of Tacoma Well 12A Site--to
23 facilitate the investigation, analysis, and cleanup of this
24 Commencement Bay South Tacoma Channel Site.

25 11. From approximately January 7, 1987, to
26

1 June 12, 1994, some of the Potentially Responsible Parties
2 ("PRPs") under EPA's oversight undertook a Remedial Investigation
3 and Feasibility Study ("RI/FS") for the Site, pursuant to CERCLA
4 and the National Oil and Hazardous Substance Pollution
5 Contingency Plan, 40 C.F.R. Part 300.

6 12. Pursuant to Section 117 of CERCLA, 42 U.S.C.
7 § 9617, EPA published notice of the completion of the FS and of
8 the proposed plan for remedial action on June 12, 1994, and
9 provided opportunity for public comment on the proposed remedial
10 action.

11 13. The decision by EPA on the remedial action to be
12 implemented at the Site is embodied in a final Record of Decision
13 ("ROD"), executed on September 29, 1994. The Record of Decision
14 is attached to this Order as Attachment 1 and is incorporated by
15 reference. The Record of Decision is supported by an
16 administrative record that contains the documents and information
17 upon which EPA based the selection of the response action.

18 14. Major contaminants of concern in soil at the Site
19 include heavy metals (including lead, arsenic, copper and
20 cadmium), polycyclic aromatic hydrocarbons (PAHs) and
21 polychlorinated biphenyls (PCBs). Major contaminants of concern
22 in the groundwater at the site include benzene, toluene, ethyl
23 benzene, xylenes, and 1,1,2 trichloroethane. Several of these
24 hazardous substances and contaminants have become co-mingled in
25 both the soil and groundwater at the Site.

1 15. Results from the RI indicate that surface soils
2 and subsurface soils are contaminated with high levels of lead,
3 arsenic, copper and zinc, particularly at the former and current
4 Amsted and BNSF properties. Lead levels in surface soils range
5 from 1-118,000 mg/kg. Arsenic levels range from 0.12-696 mg/kg.
6 Copper levels range from 6-163,000 mg/kg and zinc ranges from
7 11-61,600 mg/kg. Polycyclic aromatic hydrocarbons (PAHs) were
8 also detected in surface soils at levels from 0.004-42.4 mg/kg
9 and polychlorinated biphenyls (PCBs) were from 0.17-56 mg/kg.

10 16. In addition, PAHs were detected on the TPU
11 property in the bottoms of some of the dry wells at levels
12 ranging from 0.04-141 mg/kg. PCBs were also found in these dry
13 wells at concentrations up to 840 mg/kg.

14 17. The groundwater at the Pioneer property is
15 contaminated. Concentrations of ethylbenzene and
16 1,1,2-trichloroethane were detected above the federal maximum
17 contaminant levels (MCLs) in groundwater. Ethylbenzene was
18 detected at concentrations between 150-1000 ug/l and
19 1,1,2-trichloroethane was found at concentrations between 5-51
20 ug/l. The MCLs for these contaminants are 700 ug/l and 5 ug/l,
21 respectively.

22 18. The Human Health Risk Assessment ("HHRA") for the
23 Site evaluated risks due to contamination in the Site's soil,
24 groundwater, surface water, and sediment. The HHRA identified
25 the type and magnitude of exposures to contaminants of concern
26 that are present or migrating from the Site. The routes of

1 exposure considered by the HHRA include ingestion of soil, skin
2 contact with soil, and ingestion of groundwater. The HHRA
3 assumed a future industrial use and considered the risks posed by
4 ingestion and direct contact based on an industrial use scenario.

5 19. The contamination in surface and subsurface soils
6 may be transported by wind, surface water run-off, and earth
7 moving activities. If moved by surface water run-off,
8 contamination could be transported via the Site's wetland
9 drainage channel to ecologically sensitive water bodies such as
10 the Chambers Creek, Flett Creek, and/or the aquifer which the
11 City of Tacoma uses as a drinking water source. This aquifer is
12 hydrologically connected to and also threatened by the Site's
13 contaminated groundwater.

14 20. The ROD concluded that the contaminated soils,
15 sediments, and groundwater located within the Site pose an
16 unacceptable risk to human health and the environment. The
17 Agency for Toxic Substances and Disease Registry (ATSDR) issued a
18 public health assessment for the Site which made the same
19 conclusion.

20 21. In 1987, EPA and BNSF signed an Administrative
21 Order on Consent (Consent Order) in which BNSF agreed to
22 investigate their property. BNSF submitted a Phase I report and
23 work plan for performing additional investigative activities.
24 Based on this information, EPA decided to address all
25 contamination at the site and expanded the site boundaries and
26 completed a PRP search for the entire Site.

1 22. In 1989, EPA notified eight PRPs -- BNSF, Amsted,
2 Glacier Park Company, TPU, Pioneer, Tacoma Industrial Properties,
3 Atlas, and General Plastics -- of their potential liability for
4 contamination at the site and requested their participation in
5 conducting an RI/FS. In 1990, EPA signed a Consent Order with
6 BNSF, Glacier Park Company, TPU, and Pioneer. Later, Amsted and
7 Tacoma Industrial Properties also signed the Consent Order.
8 General Plastics and Atlas declined to participate in the RI/FS.

9 23. In 1989, EPA and Amsted entered into a Consent
10 Order whereby Amsted agreed to demolish the brass foundry
11 building. Amsted completed the demolition work in 1990.

12 24. In 1991, EPA and Amsted signed a Consent Order in
13 which Amsted agreed to investigate petroleum hydrocarbon
14 contamination in the subsurface soil and floating product on the
15 groundwater table discovered at their property. These studies
16 were completed in 1993.

17 25. In August, 1995, EPA issued Special Notice Letters
18 to seven PRPs requesting that they negotiate a Consent Decree to
19 perform the remedial action and to reimburse EPA for all
20 unreimbursed response costs incurred by EPA in connection with
21 the Site. EPA issued special notice letters to two other PRPs
22 shortly thereafter. The nine parties are BNSF, Amsted, Pioneer,
23 TPU, Tacoma Public Works, Atlas Foundry, BN, STLLC and Tacoma
24 Industrial Properties. Tacoma Industrial Properties and Tacoma
25 Public Works did not participate in Consent Decree negotiations.

26 26. The remedy selected by the ROD generally requires

1 excavation and treatment of highly contaminated soils,
2 containment of other contaminated soils, treatment of
3 contaminated groundwater by air sparging and in-situ vapor
4 extraction, groundwater monitoring, monitoring of the
5 wetlands/drainage channel, and the implementation of
6 institutional controls to ensure that future land uses are
7 consistent with the level of protectiveness achieved by the
8 selected remedial actions. The selected remedy is more
9 specifically described in Section 9 of the ROD and in the
10 attached SOW.

11 27. The excavation, consolidation, and cap remedy
12 selected for the STF soils will reduce the risk to on-Site
13 workers from soil ingestion and direct contact with contaminated
14 soils. Because waste will be left in place in those areas that
15 will be capped, groundwater monitoring will be required to ensure
16 that those soils do not serve as a source of groundwater
17 contamination. Any known future development within the Site must
18 be consistent with the completed remedial action to ensure that
19 future users will not be exposed to contaminated soils.
20 Additionally, a plan for implementing institutional controls in
21 the areas where waste is left in place is required to ensure that
22 any future landowners will understand the nature and extent of
23 contamination and restrict future development to appropriate
24 uses. Because the anticipated level of cleanup is not consistent
25 with residential uses of the property, residential uses will be
26 restricted. Excavation of contaminated soils in the TPU dry

1 wells should remove all contamination and eliminate any future
2 risk from exposure to contaminated soils thus there will be no
3 need for institutional controls in this area. The remedial
4 actions selected for groundwater contamination are necessary to
5 prevent contamination of the City of Tacoma's drinking water
6 source.

7
8 III. CONCLUSIONS OF LAW AND DETERMINATIONS

9 28. The South Tacoma Site is a "facility" as defined
10 in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

11 29. Each Respondent is a "person" as defined in
12 Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

13 30. Each Respondent is a "liable party" as defined in
14 Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is subject to
15 this Order under Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

16 31. The substances listed in Paragraph 14 are found at
17 the Site and are "hazardous substances" as defined in Section
18 101(14) of CERCLA, 42 U.S.C. § 9601(14).

19 32. These hazardous substances have been, are being,
20 and threaten to be released from the Site into the soil,
21 groundwater, surface water, and air.

22 33. The past and/or present disposal and migration of
23 hazardous substances from the Site are a "release" as defined in
24 Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

1 34. The potential for future migration of hazardous
2 substances from the Site poses a threat of a "release" as defined
3 in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

4 35. The release and continued threat of release of one
5 or more hazardous substances from the facility may present an
6 imminent and substantial endangerment to the public health,
7 welfare, or the environment.

8 36. The contamination and endangerment at this Site
9 constitute an indivisible injury. The actions required by this
10 Order are necessary to protect the public health, welfare, and
11 the environment.

12
13 IV. NOTICE TO THE STATE

14 37. On March 18, 1996, prior to issuing this Order,
15 EPA notified the State of Washington, Department of Ecology, that
16 EPA would be issuing this Order.

17
18 V. ORDER

19 38. Based on the foregoing, Respondents are hereby
20 ordered to comply with the provisions including, but not limited
21 to, all attachments to this Order, all documents incorporated by
22 reference into this Order, and all schedules and deadlines in
23 this Order, attached to this Order, or incorporated by reference
24 into this Order.

25
26 VI. DEFINITIONS

1 39. Unless otherwise expressly provided herein, terms
2 used in this Order which are defined in CERCLA or in regulations
3 promulgated under CERCLA shall have the meaning assigned to them
4 in the statute or its implementing regulations. Whenever terms
5 listed below are used in this Order or in the documents attached
6 to this Order or incorporated by reference into this Order, the
7 following definitions shall apply:

8 A. "CERCLA" shall mean the Comprehensive
9 Environmental Response, Compensation, and Liability Act of 1980,
10 as amended, 42 U.S.C. § 9601, et seq.;

11 B. "Day" shall mean a calendar day unless expressly
12 stated to be a working day. "Working day" shall mean a day other
13 than a Saturday, Sunday, or Federal holiday. In computing any
14 period of time under this Order, where the last day would fall on
15 a Saturday, Sunday, or Federal holiday, the period shall run
16 until the end of the next working day;

17 C. "EPA" shall mean the United States Environmental
18 Protection Agency;

19 D. "National Contingency Plan" or "NCP" shall mean
20 the National Oil and Hazardous Substance Pollution Contingency
21 Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C.
22 § 9605, codified at 40 C.F.R. Part 300, including any amendments
23 thereto;

24 E. "Operation and Maintenance" or "O&M" shall mean
25 all activities required under the Operation and Maintenance Plan
26

1 developed by Respondents pursuant to this Order and Section VII
2 of the Statement of Work, and approved by EPA;

3 F. "Paragraph" shall mean a portion of this Order
4 identified by an Arabic numeral;

5 G. "Performance Standards" shall mean those cleanup
6 standards, standards of control, and other substantive
7 requirements, criteria, or limitations, identified in the Record
8 of Decision and Statement of Work, that the Remedial Action and
9 Work required by this Order must attain and maintain;

10 H. "Record of Decision" or "ROD" shall mean the EPA
11 Record of Decision relating to the Site, signed on
12 September 29, 1994, by the Regional Administrator, EPA Region 10,
13 and all attachments thereto;

14 I. "Remedial Action" or "RA" shall mean those
15 activities, except for Operation and Maintenance, to be
16 undertaken by Respondents to implement the final plans and
17 specifications submitted by Respondents pursuant to the Remedial
18 Design Work Plan approved by EPA, including any additional
19 activities required under Section X, XI, XII, XIII, and XIV of
20 this Order;

21 J. "Remedial Design" or "RD" shall mean those
22 activities to be undertaken by Respondents to develop the final
23 plans and specifications for the Remedial Action pursuant to the
24 Remedial Design Work Plan;

25 K. "Response Costs" shall mean all costs, including
26 direct costs, indirect costs, and accrued interest incurred by

1 the United States to perform or support response actions at the
2 Site. Response costs include, but are not limited to, the costs
3 of overseeing the Work, such as the costs of reviewing or
4 developing plans, reports, and other items pursuant to this Order
5 and costs associated with verifying the Work;

6 L. "Statement of Work" or "SOW" shall mean the
7 statement of work for implementation of the Remedial Design,
8 Remedial Action, and Operation and Maintenance at the Site, as
9 set forth in Attachment 2 to this Order. The Statement of Work
10 is incorporated into this Order and is an enforceable part of
11 this Order;

12 M. "Section" shall mean a portion of this Order
13 identified by a Roman numeral and includes one or more
14 paragraphs;

15 N. "Site" shall mean the South Tacoma Field Operable
16 Unit of the Commencement Bay South Tacoma Channel Superfund
17 Site, encompassing approximately 260 acres, located in the
18 southwestern portion of the City of Tacoma in Pierce County,
19 Washington, as described in the Record of Decision;

20 O. "State" shall mean the State of Washington;

21 P. "United States" shall mean the United States of
22 America; and

23 Q. "Work" shall mean all activities Respondents are
24 required to perform under this Order, including Remedial Design,
25 Remedial Action, Operation and Maintenance, and any activities
26

1 required to be undertaken pursuant to Sections VII through XXIV,
2 and XXVII of this Order.

3
4 VII. NOTICE OF INTENT TO COMPLY

5 40. Respondents shall provide, not later than five (5)
6 days after the effective date of this Order, written notice to
7 EPA's Remedial Project Manager ("RPM") stating whether they will
8 comply with the terms of this Order. If Respondents do not
9 unequivocally commit to perform the Remedial Design and Remedial
10 Action as provided by this Order, they shall be deemed to have
11 violated this Order and to have failed to comply with this Order.
12 Respondents' written notice shall describe, using facts that
13 exist on or prior to the effective date of this Order, any
14 "sufficient cause" defenses asserted by Respondents under
15 Sections 106(b) and 107(c)(3) of CERCLA. The absence of a
16 response by EPA to the notice required by this paragraph shall
17 not be deemed to be acceptance of Respondents' assertions.

18
19 VIII. PARTIES BOUND

20 41. This Order shall apply to and be binding upon each
21 Respondent identified in Paragraph 8, their directors, officers,
22 employees, agents, successors, and assigns. Respondents are
23 jointly and severally responsible for carrying out all activities
24 required by this Order. No change in the ownership, corporate
25 status, or other control of any Respondent shall alter any of the
26 Respondents' responsibilities under this Order.

1 42. Respondents shall provide a copy of this Order to
2 any prospective owners or successors before a controlling
3 interest in any Respondent's assets, property rights, or stock
4 are transferred to the prospective owner or successor.
5 Respondents shall provide a copy of this Order to each
6 contractor, subcontractor, laboratory, or consultant retained to
7 perform any Work under this Order, within five (5) days after the
8 effective date of this Order or on the date such services are
9 retained, whichever date occurs later. Respondents shall also
10 provide a copy of this Order to each person representing any
11 Respondent with respect to the Site or the Work and shall
12 condition all contracts and subcontracts entered into hereunder
13 upon performance of the work in conformity with the terms of this
14 Order. With regard to the activities undertaken pursuant to this
15 order, each contractor and subcontractor shall be deemed to be
16 related by contract to the Respondents within the meaning of
17 Section 107(b) (3) of CERCLA, 42 U.S.C. § 9607(b) (3).
18 Notwithstanding the terms of any contract, Respondents are
19 responsible for compliance with this Order and for ensuring that
20 their contractors, subcontractors, and agents comply with this
21 Order, and perform any Work in accordance with this Order.

22 43. Within five (5) days after the effective date of
23 this Order each Respondent that owns real property comprising all
24 or part of the Site shall record a copy or copies of this Order
25 in the appropriate governmental office where land ownership and
26 transfer records are filed or recorded, and shall ensure that the

1 recording of this Order is indexed to the titles of each and
2 every property at the Site so as to provide notice to third
3 parties of the issuance and terms of this Order with respect to
4 those properties. Respondents shall, within fifteen (15) days
5 after the effective date of this Order, send notice of such
6 recording and indexing to EPA.

7 44. Not later than sixty (60) days prior to any
8 transfer of any real property interest in any property included
9 within the Site, Respondents shall submit a true and correct copy
10 of the transfer document(s) to EPA, and shall identify the
11 transferee by name, principal business address, and effective
12 date of the transfer.

13
14 IX. WORK TO BE PERFORMED

15 45. Respondents shall cooperate with EPA in providing
16 information regarding the Work to the public. As requested by
17 EPA, Respondents shall participate in the preparation of such
18 information for distribution to the public and in public meetings
19 which may be held or sponsored by EPA to explain activities at or
20 relating to the Site.

21 46. All aspects of the Work to be performed by
22 Respondents pursuant to this Order shall be under the direction
23 and supervision of a qualified Project Manager, the selection of
24 which shall be subject to approval by EPA. Within twenty (20)
25 days after the effective date of this Order, Respondents shall
26 notify EPA, in writing, of the name and qualifications of the

1 Project Manager, including primary support entities and staff,
2 proposed to be used in carrying out Work under this Order. If,
3 at any time, Respondents propose to use a different Project
4 Manager, Respondents shall notify EPA and shall obtain approval
5 from EPA before the new Project Manager performs any Work under
6 this Order.

7 47. EPA will review Respondents' selection of a
8 Project Manager according to the terms of this paragraph and
9 Section XIV of this Order. If EPA disapproves of the selection
10 of the Project Manager, Respondents shall submit to EPA within
11 thirty (30) days after receipt of EPA's disapproval of the
12 Project Manager previously selected, a list of Project Managers,
13 including primary support entities and staff, that would be
14 acceptable to Respondents. EPA will thereafter provide written
15 notice to Respondents of the names of the Project Managers that
16 are acceptable to EPA. Respondents may then select any approved
17 Project Manager from that list and shall notify EPA of the name
18 of the Project Manager selected within twenty-one (21) days of
19 EPA's designation of approved Project Managers.

20
21 A. Remedial Design

22 48. Within thirty (30) days after Respondents select
23 an approved Project Manager, Respondents shall submit a Work Plan
24 for the Remedial Design at the Site ("Remedial Design Work Plan"
25 or "RD Work Plan") to EPA for review and approval. The RD Work
26 Plan shall include a step-by-step plan for completing the

1 remedial design for the remedy described in the ROD and for
2 attaining and maintaining all requirements, including Performance
3 Standards, identified in the ROD. The Remedial Design Work Plan
4 must describe in detail the tasks and deliverables Respondents
5 will complete during the remedial design phase, and a schedule
6 for completing the tasks and deliverables in the Remedial Design
7 Work Plan. The major tasks and deliverables described in the
8 Remedial Design Work Plan shall include, but not be limited to,
9 the following: (1) Sampling and Analysis Plan; (2) Health and
10 Safety Plan; (3) Future Site Safety Implementation Plan;
11 (4) Pilot Study Work Plan; (5) Pilot Study Sampling and Analysis
12 Plan; (6) Pilot Study Health and Safety Plan (if determined by
13 EPA to be applicable); (7) Site Development Work Plan; and
14 (8) Plan for Implementation of Institutional Controls. In
15 addition, the Remedial Design Work Plan shall include a schedule
16 for completion of the Remedial Action Work Plan. The Site Health
17 and Safety Plan shall conform to the applicable Occupational
18 Safety and Health Administration and EPA requirements, including,
19 but not limited to, 54 Fed. Reg. 9294.

20 49. The Remedial Design Work Plan shall be consistent
21 with, and shall provide for implementing the Statement of Work,
22 and shall comport with EPA's "Superfund Remedial Design and
23 Remedial Action Guidance, OSWER Directive 9355.0-4A." Upon
24 approval by EPA, the Remedial Design Work Plan is incorporated
25 into this Order as a requirement of this Order and shall be an
26 enforceable part of this Order.

1 50. Upon approval of the Remedial Design Work Plan by
2 EPA, Respondents shall implement the Remedial Design Work Plan
3 according to the schedule in the approved Remedial Design Work
4 Plan. Any violation of the approved Remedial Design Work Plan
5 shall be a violation of this Order. Unless otherwise directed by
6 EPA, Respondents shall not perform further Work at the Site prior
7 to EPA's written approval of the Remedial Design Work Plan.

8 51. Within forty-five (45) days after EPA approves the
9 Remedial Design Work Plan, Respondents shall submit a Preliminary
10 Design to EPA for review and approval. The Preliminary Design
11 submittal shall include, at a minimum, the following:

12 (1) results of data acquisition activities; (2) design criteria
13 report; (3) preliminary plans and specifications; (4) plans for
14 satisfying permitting requirements; (5) pilot study final report;
15 (6) draft construction schedule; and (7) draft performance
16 standards verification plan.

17 52. Within forty-five (45) days after EPA approves the
18 Preliminary Design, Respondents shall submit a Prefinal Design to
19 EPA for review and approval. The Prefinal Design submittal shall
20 include, at a minimum, the following: (1) prefinal design
21 analyses; (2) prefinal plans and specifications; (3) prefinal
22 construction schedule; (4) draft operation and maintenance Plan;
23 (5) prefinal performance standard verification plan; and (6)
24 construction cost estimate.

25 53. Within thirty (30) days after EPA approves the
26 Prefinal Design, Respondents shall submit a Final Design to EPA

1 for review and approval. The Final Design submittal shall
2 include, at a minimum, the following: (1) complete design
3 analyses; (2) final plans and specifications; (3) final
4 construction schedule; (4) draft operation and maintenance Plan;
5 (5) final performance standard verification plan;
6 (6) construction cost estimate; and (7) supporting documentation
7 which resolves any issues or change requests made as a result of
8 EPA reviews.

9 54. Upon EPA approval, the Final Design is
10 incorporated into this Order as a requirement of this Order and
11 shall be an enforceable part of this Order.

12
13 B. Remedial Action

14 55. Concurrent with the submittal of the Final Design,
15 the Respondents shall submit a draft Remedial Action ("RA") Work
16 Plan, which will include a Construction Management Plan, a
17 Construction Quality Assurance Plan and a Construction Health and
18 Safety Plan/Contingency Plan, to EPA for review and approval.
19 The RA Work Plan shall be developed in accordance with the ROD,
20 and the attached Statement of Work, and shall be consistent with
21 the Final Design as approved by EPA. The RA Work Plan shall
22 include methodologies, plans, and schedules for completion of at
23 least the following: (1) construction management plan;
24 (2) construction quality assurance project plan ("CQAP");
25 (3) construction health and safety plan/contingency plan;
26 (4) transport and disposal plan; (5) all other plans or documents

1 required by the Statement of Work; and (6) list and schedule of
2 submittals. The CQAP shall describe the approach to quality
3 assurance during construction activities at the Site and shall
4 specify a quality assurance official (QA Official), independent
5 of the construction contractor, to conduct a quality assurance
6 program during the construction phase of the project. The RA
7 Work Plan shall also include a schedule for implementing all
8 remedial action tasks identified in the Statement of Work and
9 shall identify the initial formulation of Respondent's Remedial
10 Action Project Team (including the Supervising Contractor). At
11 the same time as they submit the Remedial Action Work Plan,
12 Respondents shall submit to EPA a Health and Safety Plan for
13 field activities required by the Remedial Action Work Plan which
14 conforms to the applicable Occupational Safety and Health
15 Administration and EPA requirements including, but not limited
16 to, 29 C.F.R. § 1910.120.

17 56. Upon approval by EPA, the Remedial Action Work
18 Plan is incorporated into this Order as a requirement of this
19 Order and shall be an enforceable part of this Order.

20 57. Upon approval of the Remedial Action Work Plan by
21 EPA, Respondents shall implement the Remedial Action Work Plan
22 according to the schedules in the Remedial Action Work Plan.
23 Unless otherwise directed by EPA, Respondents shall not commence
24 remedial action at the Site prior to approval of the Remedial
25 Action Work Plan.

1 58. If Respondents seek to retain a construction
2 contractor to assist in the performance of the Remedial Action,
3 then Respondents shall submit a copy of the contractor
4 solicitation documents to EPA not later than five (5) days after
5 publishing the solicitation documents.

6 59. Within twenty (20) days after EPA approves the
7 Remedial Action Work Plan, Respondents shall notify EPA, in
8 writing, of the name, title, and qualifications of any
9 construction contractor proposed to be used in carrying out work
10 under this Order. EPA shall thereafter provide written notice of
11 the name(s) of the contractor(s) it approves, if any.
12 Respondents may select any approved contractor from that list and
13 shall notify EPA of the name of the contractor selected within
14 twenty-one (21) days of EPA's designation of approved
15 contractors. If, at any time, Respondents propose to change the
16 construction contractor, Respondents shall notify EPA and shall
17 obtain approval from EPA as provided in this paragraph, before
18 the new construction contractor performs any work under this
19 Order. If EPA disapproves of the selection of any contractor as
20 the construction contractor, Respondents shall submit a list of
21 contractors that would be acceptable to them to EPA within
22 thirty (30) days after receipt of EPA's disapproval of the
23 contractor previously selected.

24 60. The Work performed by Respondents pursuant to this
25 Order shall, at a minimum, achieve the Performance Standards
26 specified in the Record of Decision and in Paragraph II(B) of the

1 Statement of Work. The Respondents shall submit for EPA approval
2 a statistical approach to determine when Performance Standards
3 have been achieved.

4 61. Notwithstanding any action by EPA, Respondents
5 remain fully responsible for achievement of the Performance
6 Standards in the ROD and SOW. Nothing in this Order, or in EPA's
7 approval of the SOW, or in the Remedial Design or Remedial Action
8 Work Plans, or approval of any other submission, shall be deemed
9 to constitute a warranty or representation of any kind by EPA
10 that full performance of the Remedial Design or Remedial Action
11 will achieve the Performance Standards set forth in the ROD and
12 in Paragraph II(B) of the SOW. Respondents' compliance with such
13 approved documents does not foreclose EPA from seeking additional
14 work to achieve the applicable Performance Standards.

15 62. Respondents shall, prior to any off-Site shipment
16 of hazardous substances from the Site to an out-of-state waste
17 management facility, provide written notification to the
18 appropriate state environmental official in the receiving state
19 and to EPA's RPM of such shipment of hazardous substances.
20 However, the notification of shipments shall not apply to any
21 off-Site shipments when the total volume of all shipments from
22 the Site to the state will not exceed ten (10) cubic yards.

23 a. The notification shall be in writing, and shall
24 include the following information, where available: (1) the name
25 and location of the facility to which the hazardous substances
26 are to be shipped; (2) the type and quantity of the hazardous

1 substances to be shipped; (3) the expected schedule for the
2 shipment of the hazardous substances; and (4) the method of
3 transportation. Respondents shall notify the receiving state of
4 major changes in the shipment plan, such as a decision to ship
5 the hazardous substances to another facility within the same
6 state, or to a facility in another state.

7 b. The identity of the receiving facility and state
8 will be determined by Respondents following the award of the
9 contract for Remedial Action construction. Respondents shall
10 provide all relevant information, including information under the
11 categories noted in Paragraph 62.a above, on the off-Site
12 shipments as soon as practicable after the award of the contract
13 and before the hazardous substances are actually shipped.

14 63. Within thirty (30) days after Respondents conclude
15 that the RA has been fully performed, Respondents shall so notify
16 EPA and shall schedule, subject to EPA approval, a
17 pre-certification inspection to be attended by Respondents and
18 EPA. Respondents shall conduct the pre-certification inspection
19 in accordance with the EPA approved schedule. The
20 pre-certification inspection shall be followed by a written
21 report submitted within thirty (30) days of the inspection by a
22 registered professional engineer and Respondents' Project
23 Coordinator certifying that the Remedial Action has been
24 completed in full satisfaction of the requirements of this Order.
25 Concurrently, Respondents shall submit for EPA approval a
26 statistical approach to determine when Performance Standards have

1 been achieved. If, after completion of the pre-certification
2 inspection and receipt and review of the written report, EPA
3 determines that the Remedial Action or any portion thereof has
4 not been completed in accordance with this Order, EPA shall
5 notify Respondents, in writing, of the activities that must be
6 undertaken to complete the Remedial Action and shall set forth in
7 the notice a schedule for performance of such activities.
8 Respondents shall perform all activities described in the notice
9 in accordance with the specifications and schedules established
10 therein. If EPA concludes, following the initial or any
11 subsequent certification of completion by Respondents that the
12 Remedial Action has been fully performed in accordance with this
13 Order, EPA may notify Respondents that the Remedial Action has
14 been fully performed. EPA's notification shall be based on
15 present knowledge and Respondents' certification to EPA, and
16 shall not limit EPA's right to perform periodic reviews pursuant
17 to Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), or to take or
18 require any action that in the judgment of EPA is appropriate at
19 the Site, in accordance with 42 U.S.C. §§ 9604, 9606, or 9607.

20 64. Within thirty (30) days after Respondents conclude
21 that all phases of the Work have been fully performed, that the
22 Performance Standards have been attained, and that all Operation
23 and Maintenance activities have been completed, Respondents shall
24 submit to EPA a written report by a registered professional
25 engineer certifying that the Work has been completed in full
26 satisfaction of the requirements of this Order. EPA shall

1 require such additional activities as may be necessary to
2 complete the Work or EPA may, based upon present knowledge and
3 Respondents' certification to EPA, issue written notification to
4 Respondents that the Work has been completed, as appropriate, in
5 accordance with the procedures set forth in Paragraph 63 for
6 Respondents certification of completion of the Remedial Action.
7 EPA's notification shall not limit EPA's right to perform
8 periodic reviews pursuant to Section 121(c) of CERCLA, 42 U.S.C.
9 § 9621(c), or to take or require any action that in the judgment
10 of EPA is appropriate at the Site, in accordance with 42 U.S.C.
11 §§ 9604, 9606, or 9607.
12

13 X. FAILURE TO ATTAIN PERFORMANCE STANDARDS

14 65. In the event that EPA determines that additional
15 response activities are necessary to meet applicable Performance
16 Standards, EPA may notify Respondents that additional response
17 actions are necessary.

18 66. Unless otherwise stated by EPA, within thirty (30)
19 days of receipt of notice from EPA that additional response
20 activities are necessary to meet any applicable performance
21 Standards, Respondents shall submit for approval by EPA a Work
22 Plan for the additional response activities. The plan shall
23 conform to the applicable requirements of Sections IX, XVI, and
24 XVII of this Order. Upon EPA's approval of the plan pursuant to
25 Section XIV, Respondents shall implement the plan for additional
26

1 response activities in accordance with the provisions and
2 schedule contained therein.

1 XI. EPA PERIODIC REVIEW

2 67. Under Section 121(c) of CERCLA, 42 U.S.C.
3 § 9621(c), and any applicable regulations, EPA may review the
4 Site to assure that the Work performed pursuant to this Order
5 adequately protects human health and the environment. Until such
6 time as EPA certifies completion of the Work, Respondents shall
7 conduct the requisite studies, investigations, or other response
8 actions as determined necessary by EPA in order to permit EPA to
9 conduct the review under Section 121(c) of CERCLA. As a result
10 of any review performed under this paragraph, Respondents may be
11 required to perform additional Work or to modify Work previously
12 performed.

13
14 XII. ADDITIONAL RESPONSE ACTIONS

15 68. EPA may determine that in addition to the Work
16 identified in this Order and attachments to this Order,
17 additional response activities may be necessary to protect human
18 health and the environment. If EPA determines that additional
19 response activities are necessary, EPA may require Respondents to
20 submit a Work Plan for additional response activities. EPA may
21 also require Respondents to modify any plan, design, or other
22 deliverable required by this Order, including any approved
23 modifications.

24 69. Not later than thirty (30) days after receiving
25 EPA's notice that additional response activities are required
26 pursuant to this Section, Respondents shall submit a Work Plan

1 for the response activities to EPA for review and approval. Upon
2 approval by EPA, the Work Plan is incorporated into this Order as
3 a requirement of this Order and shall be an enforceable part of
4 this Order. Upon approval of the Work Plan by EPA, Respondents
5 shall implement the Work Plan according to the standards,
6 specifications, and schedule in the approved Work Plan.
7 Respondents shall notify EPA of their intent to perform such
8 additional response activities within seven (7) days after
9 receipt of EPA's request for additional response activities.

10
11 XIII. ENDANGERMENT AND EMERGENCY RESPONSE

12 70. In the event of any action or occurrence during
13 the performance of the Work which causes or threatens to cause a
14 release of a hazardous substance or which may present an
15 immediate threat to public health or welfare or the environment,
16 Respondents shall immediately take all appropriate action to
17 prevent, abate, or minimize the threat, and shall immediately
18 notify EPA's Remedial Project Manager ("RPM") or, if the RPM is
19 unavailable, EPA's alternate RPM. If neither of these persons is
20 available, Respondents shall notify the EPA Emergency Response
21 Unit of the Office of Environmental Cleanup, Region 10.
22 Respondents shall take such action in consultation with EPA's RPM
23 and in accordance with all applicable provisions of this Order,
24 including, but not limited to, the Health and Safety Plan and the
25 Contingency Plan. In the event that Respondents fail to take
26 appropriate response action as required by this Section, and EPA

1 takes that action instead, Respondents shall reimburse EPA for
2 all costs of the response action not inconsistent with the NCP.
3 Respondents shall pay the response costs in the manner described
4 in Section XXIV of this Order, within thirty (30) days of their
5 receipt of demand for payment and of a Superfund Costs
6 Organization Enhancement System ("SCORES") report which includes
7 a summary of direct and indirect of the costs incurred by EPA and
8 its contractors.

9 71. Nothing in the preceding paragraph shall be deemed
10 to limit any authority of the United States to take, direct, or
11 order all appropriate action to protect human health and the
12 environment or to prevent, abate, or minimize an actual or
13 threatened release of hazardous substances on, at, or from the
14 Site.

15 16 XIV. EPA REVIEW OF SUBMISSIONS

17 72. After review of any deliverable, plan, report, or
18 other item which is required to be submitted for review and
19 approval pursuant to this Order, EPA may: (a) approve the
20 submission; (b) approve the submission with modifications;
21 (c) disapprove the submission and direct Respondents to resubmit
22 the document after incorporating EPA's comments; or
23 (d) disapprove the submission and assume responsibility for
24 performing all or any part of the response action. As used in
25 this Order, the terms "approval by EPA", "EPA approval", or a
26

1 similar term means the action described in (a) or (b) of this
2 paragraph.

3 73. In the event of approval or approval with
4 modifications by EPA, Respondents shall proceed to take any
5 action required by the plan, report, or other item, as approved
6 or modified by EPA.

7 74. Upon receipt of a notice of disapproval or a
8 request for a modification, Respondents shall, within
9 twenty-one (21) days or such longer time as specified by EPA in
10 its notice of disapproval or request for modification, correct
11 the deficiencies and resubmit the plan, report, or other item for
12 approval. Notwithstanding the notice of disapproval, or approval
13 with modifications, Respondents shall proceed, at the direction
14 of EPA, to take any action required by any non-deficient portion
15 of the submission.

16 75. If any submission is not approved by EPA,
17 Respondents shall be deemed to be in violation of this Order.

18
19 XV. PROGRESS REPORTS

20 76. In addition to the other deliverables set forth in
21 this Order, Respondents shall provide monthly progress reports to
22 EPA with respect to actions and activities undertaken pursuant to
23 this Order. The progress reports shall be submitted on or before
24 the 5th day of each month following the effective date of this
25 Order. Respondents' obligation to submit progress reports
26 continues until EPA gives Respondents written notice under

1 Paragraph 64. At a minimum, these progress reports shall:
2 (1) describe the actions which have been taken to comply with
3 this Order during the prior month; (2) include all results of
4 sampling and tests and all other data received by Respondents and
5 not previously submitted to EPA; (3) describe all work planned
6 for the next sixty (60) days with schedules relating such work to
7 the overall project schedule for RD/RA completion; and (4)
8 describe all problems encountered and any anticipated problems,
9 any actual or anticipated delays, and solutions developed and
10 implemented to address any actual or anticipated problems or
11 delays.
12

13 XVI. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

14 77. Respondents shall use the quality assurance,
15 quality control, and chain-of-custody procedures described in the
16 "EPA NEIC Policies and Procedures Manual", May 1978, revised
17 May 1986, EPA-330/9-78-001-R, EPA's "Guidelines and
18 Specifications for Preparing Quality Assurance Program
19 Documentation", June 1, 1987, EPA's "Data Quality Objective
20 Guidance", (EPA/540/G87/003 and 004), and any amendments to these
21 documents, while conducting all sample collection and analysis
22 activities required herein by any plan. To provide quality
23 assurance and maintain quality control, Respondents shall:

- 24 a. Use only laboratories which have a documented Quality
25 Assurance Program that complies with EPA guidance
26 document QAMS-005/80.

1 b. Ensure that the laboratory used by the Respondents for
2 analyses performs according to a method or methods
3 deemed satisfactory to EPA and submits all protocols to
4 be used for analyses to EPA at least thirty (30) days
5 before beginning analysis.

6 c. Ensure that EPA personnel and EPA's authorized
7 representatives are allowed access to the laboratory
8 and personnel utilized by the Respondents for analyses.

9 78. Respondents shall notify EPA not less than
10 fourteen (14) days in advance of any sample collection activity.
11 At the request of EPA, Respondents shall allow split or duplicate
12 samples to be taken by EPA or its authorized representatives, of
13 any samples collected by Respondents with regard to the Site or
14 pursuant to the implementation of this Order. In addition, EPA
15 shall have the right to take any additional samples that EPA
16 deems necessary.

17
18 XVII. COMPLIANCE WITH APPLICABLE LAWS

19 79. All activities by Respondents pursuant to this
20 Order shall be performed in accordance with the requirements of
21 all Federal and state laws and regulations. EPA has determined
22 that the activities contemplated by this Order are consistent
23 with the NCP.

24 80. Except as provided in Section 121(e) of CERCLA and
25 the NCP, no permit shall be required for any portion of the Work
26 conducted entirely on-Site. Where any portion of the Work

1 requires a federal or state permit or approval, Respondents shall
2 submit timely applications and take all other actions necessary
3 to obtain and to comply with all such permits or approvals.

4 81. This Order is not, and shall not be construed to
5 be, a permit issued pursuant to any federal or state statute or
6 regulation.

7 82. All materials removed from the Site shall be
8 disposed of or treated at a facility approved by EPA's RPM and in
9 accordance with Section 121(d)(3) of CERCLA, 42 U.S.C.
10 § 9621(d)(3); with 40 C.F.R. § 300.440; and with all other
11 applicable, federal, state, and local requirements.

12
13 XVIII. REMEDIAL PROJECT MANAGER

14 83. All communications, whether written or oral, from
15 Respondents to EPA shall be directed to EPA's Remedial Project
16 Manager or Alternate Remedial Project Manager. Respondents shall
17 submit to EPA three (3) copies of all documents, including plans,
18 reports, and other correspondence, which are developed pursuant
19 to this Order, and shall send these documents by certified mail.

20 EPA's Remedial Project Manager is:

21 Cami Grandinetti
22 1200 Sixth Avenue, HW-113
23 Seattle, Washington 98101
(206) 553-8696

24 EPA's Alternate Remedial Project Manager is:

25 Deborah Yamamoto
26 1200 Sixth Avenue, HW-113
Seattle, Washington 98101
(206) 553-7216

1 84. EPA has the unreviewable right to change its
2 Remedial Project Manager ("RPM") or Alternate Remedial Project
3 Manager. If EPA changes its Remedial Project Manager or
4 Alternate Remedial Project Manager, EPA will inform Respondents,
5 in writing, of the name, address, and telephone number of the new
6 Remedial Project Manager.

7 85. EPA's RPM or alternate RPM shall have the
8 authority lawfully vested in a Remedial Project Manager and On-
9 Scene Coordinator ("OSC") by the NCP, 40 C.F.R. Part 300. EPA's
10 RPM shall have authority, consistent with the NCP, to halt any
11 work required by this Order, and to take any necessary response
12 action.

13 86. Within ten (10) days after the effective date of
14 this Order, Respondents shall designate its Project Coordinator
15 and shall submit the name, address, and telephone number of the
16 Project Coordinator to EPA for review and approval. Respondents'
17 Project Coordinator shall be responsible for overseeing
18 Respondents' implementation of this Order. If Respondents wish
19 to change his/her Project Coordinator, Respondents shall provide
20 written notice to EPA, five (5) days prior to changing the
21 Project Coordinator, of the name and qualifications of the new
22 Project Coordinator. Respondents selection of a Project
23 Coordinator shall be subject to EPA approval.

1 XIX. ACCESS TO SITE NOT OWNED BY RESPONDENT(S)

2 87. If the Site, the off-Site area that is to be used
3 for access, property where documents required to be prepared or
4 maintained by this Order are located, or other property subject
5 to or affected by the cleanup, is owned in whole or in part by
6 parties other than those bound by this Order, Respondents will
7 obtain, or use their best efforts to obtain, site access
8 agreements from the present owners within forty-five (45) days of
9 the effective date of this Order. Such agreements shall provide
10 access for EPA, its contractors and oversight officials, the
11 state and its contractors, and Respondents or Respondents'
12 authorized representatives and contractors, and such agreements
13 shall specify that Respondents are not EPA's representative with
14 respect to liability associated with Site activities.

15 Respondents shall save and hold harmless the United States and
16 its officials, agents, employees, contractors, subcontractors, or
17 representatives for or from any and all claims or cause of action
18 or other costs incurred by the United States, including, but not
19 limited to, attorneys fees and other expenses of litigation and
20 settlement arising from or on account of acts or omissions of
21 Respondents, their officers, directors, employees, agents,
22 contractors, subcontractors, and any persons acting on their
23 behalf or under their control, in carrying out activities
24 pursuant to this Order, including any claims arising from any
25 designation of Respondents as EPA's authorized representative(s)
26 under Section 104(e) of CERCLA. Copies of such agreements shall

1 be provided to EPA prior to Respondents' initiation of field
2 activities. Respondents' best efforts shall include providing
3 reasonable compensation to any off-Site property owner. If
4 access agreements are not obtained within the time referenced
5 above, Respondents shall immediately notify EPA of their failure
6 to obtain access. Subject to the United States' non-reviewable
7 discretion, EPA may use its legal authorities to obtain access
8 for the Respondents, may perform those response actions with EPA
9 contractors at the property in question, or may terminate the
10 Order if Respondents cannot obtain access agreements. If EPA
11 performs those tasks or activities with contractors and does not
12 terminate the Order, Respondents shall perform all other
13 activities not requiring access to that property, and shall
14 reimburse EPA, pursuant to Section XXIV of this order, for all
15 costs incurred in performing such activities. Respondents shall
16 integrate the results of any such tasks undertaken by EPA into
17 its reports and deliverables. Respondents shall reimburse EPA,
18 pursuant to Section XXIV of this Order, for all response costs
19 (including attorney fees) incurred by the United States to obtain
20 access for Respondents.

21
22 XX. SITE ACCESS AND DATA/DOCUMENT AVAILABILITY

23 88. Respondents shall allow EPA and its authorized
24 representatives and contractors to enter and freely move about
25 all property at the Site and off-Site areas subject to or
26 affected by the Work under this Order or where documents required

1 to be prepared or maintained by this Order are located, for the
2 purposes of inspecting conditions, activities, the results of
3 activities, records, operating logs, and contracts related to the
4 Site or Respondents' and their representatives or contractors
5 pursuant to this Order; reviewing the progress of the Respondents
6 in carrying out the terms of this Order; conducting tests as EPA
7 or its authorized representatives or contractors deem necessary;
8 using a camera, sound recording device, or other documentary-type
9 equipment; and verifying the data submitted to EPA by
10 Respondents. Respondents shall allow EPA and its authorized
11 representatives to enter the Site, to inspect and copy all
12 records, files, photographs, documents, sampling and monitoring
13 data, and other writings related to work undertaken in carrying
14 out this Order. Nothing herein shall be interpreted as limiting
15 or affecting EPA's right of entry or inspection authority under
16 federal law.

17 89. Respondents may assert a claim of business
18 confidentiality covering part or all of the information submitted
19 to EPA pursuant to the terms of this Order under 40 C.F.R.
20 § 2.203, provided such claim is not inconsistent with Section
21 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), or other provisions
22 of the law. This claim shall be asserted in the manner described
23 by 40 C.F.R. § 2.203(b) and substantiated by Respondents at the
24 time the claim is made. Information determined to be
25 confidential by EPA will be given the protection specified in
26 40 C.F.R. Part 2. If no such claim accompanies the information

1 when it is submitted to EPA, it may be made available to the
2 public by EPA or the state without further notice to the
3 Respondents. Respondents shall not assert confidentiality claims
4 with respect to any data related to Site conditions, sampling, or
5 monitoring.

6 90. Respondents shall maintain for the period during
7 which this Order is in effect, an index of documents that
8 Respondents claim contain confidential business information. The
9 index shall contain, for each document, the date, author,
10 addressee, and subject of the document. Upon written request
11 from EPA, Respondents shall submit a copy of the index to EPA.
12

13 XXI. RECORD PRESERVATION

14 91. Respondents shall provide to EPA, upon request,
15 copies of all documents and information within their possession
16 and/or control or that of their contractors or agents relating to
17 activities at the Site or to the implementation of this Order,
18 including, but not limited to, sampling, analysis,
19 chain-of-custody records, manifests, trucking logs, receipts,
20 reports, sample traffic routing, correspondence, or other
21 documents or information related to the Work. Respondents shall
22 also make available to EPA for purposes of investigation,
23 information gathering, or testimony, their employees, agents, or
24 representatives with knowledge of relevant facts concerning the
25 performance of the Work.
26

1 92. Until ten (10) years after EPA provides notice
2 pursuant to Paragraph 64, each Respondent shall preserve and
3 retain all records and documents in its possession or control,
4 including the documents in the possession or control of their
5 contractors and agents on and after the effective date of this
6 Order that relate in any manner to the Site. At the conclusion
7 of this document retention period, Respondents shall notify the
8 United States at least ninety (90) calendar days prior to the
9 destruction of any such record or documents, and upon request by
10 the United States, Respondents shall deliver any such records or
11 documents to EPA.

12 93. Until ten (10) years after EPA provides notice
13 pursuant to Paragraph 64 of this Order, Respondents shall
14 preserve, and shall instruct their contractors and agents to
15 preserve, all documents, records, and information of whatever
16 kind, nature, or description relating to the performance of the
17 Work. Upon the conclusion of this document retention period,
18 Respondents shall notify the United States at least ninety (90)
19 days prior to the destruction of any such record, documents, or
20 information, and, upon request of the United States, Respondents
21 shall deliver all such documents, records, and information to
22 EPA.

23 94. Within forty-five (45) days after the effective
24 date of this Order, Respondents shall submit a written
25 certification to EPA's RPM that they have not altered, mutilated,
26 discarded, destroyed, or otherwise disposed of any records,

1 documents, or other information relating to their potential
2 liability with regard to the Site since notification of potential
3 liability by the United States or the state, or the filing of
4 suit against it regarding the Site. Respondents shall not
5 dispose of any such documents without prior approval by EPA.
6 Respondents shall, upon EPA's request and at no costs to EPA,
7 deliver the documents or copies of the documents to EPA.
8

9 XXII. DELAY IN PERFORMANCE

10 95. Any delay in performance of this Order that, in
11 EPA's judgment, is not properly justified by Respondents under
12 the terms of this paragraph shall be considered a violation of
13 this Order. Any delay in performance of this Order shall not
14 affect Respondents obligations to fully perform all obligations
15 under the terms and conditions of this Order.

16 96. Respondents shall notify EPA of any delay or
17 anticipated delay in performing any requirement of this Order.
18 Such notification shall be made by telephone to EPA's RPM or
19 Alternate RPM within forty-eight (48) hours after Respondents
20 first knew or should have known that a delay might occur.
21 Respondents shall adopt all reasonable measures to avoid or
22 minimize any such delay. Within five (5) business days after
23 notifying EPA by telephone, Respondents shall provide written
24 notification fully describing the nature of the delay, any
25 justification for delay, any reason why Respondents should not be
26 held strictly accountable for failing to comply with any relevant

1 requirements of this Order, the measures planned and taken to
2 minimize the delay, and a schedule for implementing the measures
3 that will be taken to mitigate the effect of the delay.

4 Increased costs or expenses associated with implementation of the
5 activities called for in this Order is not a justification for
6 any delay in performance.

7
8 XXIII. ASSURANCE OF ABILITY TO COMPLETE WORK

9 97. Respondents shall demonstrate their ability to
10 complete the Work required by this order and to pay all claims
11 that arise from the performance of the Work by obtaining and
12 presenting to EPA within thirty (30) days after the approval of
13 the RD Work Plan, one of the following: (1) a performance bond;
14 (2) a letter of credit; (3) a guarantee by a third party; or
15 (4) internal financial information to allow EPA to determine that
16 Respondents have sufficient assets available to perform the Work.
17 Respondents shall demonstrate financial assurance in an amount no
18 less than the estimate of costs for the remedial design and
19 remedial action contained in the Record of Decision for the Site.
20 If Respondents seek to demonstrate ability to complete the
21 remedial action by means of internal financial information, or by
22 guaranty of a third party, they shall resubmit such information
23 annually, on the anniversary of the effective date of this Order.
24 If EPA determines that such financial information is inadequate,
25 Respondents shall, within thirty (30) days after receipt of EPA's
26 notice of determination, obtain and present to EPA for approval

1 one of the other three (3) forms of financial assurance listed
2 above.

3 98. At least seven (7) days prior to commencing any
4 work at the Site pursuant to this Order, Respondents shall submit
5 to EPA a certification that Respondents or their contractors and
6 subcontractors have adequate insurance coverage or have
7 indemnification for liabilities for injuries or damages to
8 persons or property which may result from the activities to be
9 conducted by or on behalf of Respondents pursuant to this Order.
10 Respondents shall ensure that such insurance or indemnification
11 is maintained for the duration of the Work required by this
12 Order.

13
14 XXIV. REIMBURSEMENT OF RESPONSE COSTS

15 99. Respondents shall reimburse EPA, upon written
16 demand, for all response costs incurred by the United States in
17 overseeing Respondents' implementation of the requirements of
18 this Order or in performing any response action which Respondents
19 fail to perform in compliance with this Order. EPA may submit to
20 Respondents on a periodic basis an accounting of all response
21 costs incurred by the United States with respect to this order.
22 EPA's certified Agency Financial Management System summary data
23 (SCORES Reports), or such other summary as certified by EPA,
24 shall serve as basis for payment demands.

25 100. Respondents shall, within thirty (30) days of
26 receipt of each EPA accounting, remit a certified or cashier's

1 check for the amount of those costs. Interest shall accrue from
2 the later of the date that payment of a specified amount is
3 demanded in writing or the date of the expenditure. The interest
4 rate is the rate established by the Department of the Treasury
5 pursuant to 31 U.S.C. § 3717 and 4 C.F.R. § 102.13.

6 101. Checks shall be made payable to the Hazardous
7 Substances Superfund and shall include the name of the Site, the
8 Site identification number, the account number, and the title of
9 this Order. Checks shall be forwarded to:

10 U.S. Environmental Protection Agency
11 Region 10
12 Superfund Accounting
13 P.O. Box 360903M
14 Pittsburgh, Pennsylvania 15251

15 102. Respondents shall send copies of each transmittal
16 letter and check to EPA's RPM.

17 XXV. UNITED STATES NOT LIABLE

18 103. The United States, by issuance of this Order,
19 assumes no liability for any injuries or damages to persons or
20 property resulting from acts or omissions by Respondents, or
21 their directors, officers, employees, agents, representatives,
22 successors, assigns, contractors, or consultants in carrying out
23 any action or activity pursuant to this Order. Neither EPA nor
24 the United States may be deemed to be a party to any contract
25 entered into by Respondents or their directors, officers,
26 employees, agents, successors, assigns, contractors, or

1 consultants in carrying out any action or activity pursuant to
2 this Order.

3
4 XXVI. ENFORCEMENT AND RESERVATIONS

5 104. EPA reserves the right to bring an action against
6 Respondents under Section 107 of CERCLA, 42 U.S.C. § 9607, for
7 recovery of any response costs incurred by the United States
8 related to this Order and not reimbursed by Respondents. This
9 reservation shall include, but not be limited to, past costs,
10 direct costs, indirect costs, the costs of oversight, the costs
11 of compiling the cost documentation to support oversight cost
12 demand, as well as accrued interest as provided in Section 107(a)
13 of CERCLA.

14 105. Notwithstanding any other provision of this Order,
15 at any time during the response action, EPA may perform its own
16 studies, complete the response action (or any portion of the
17 response action) as provided in CERCLA and the NCP, and seek
18 reimbursement from Respondents for its costs, or seek any other
19 appropriate relief.

20 106. Nothing in this Order shall preclude EPA from
21 taking any additional enforcement actions, including modification
22 of this Order or issuance of additional Orders, and/or additional
23 remedial or removal actions as EPA may deem necessary, or from
24 requiring Respondents in the future to perform additional
25 activities pursuant to Section 106(a) of CERCLA, 42 U.S.C.
26 § 9606(a), et seq., or any other applicable law. Respondents

1 shall be liable under Section 107(a) of CERCLA, 42 U.S.C.

2 § 9607(a), for the costs of any such additional actions.

3 107. Notwithstanding any provision of this Order, the
4 United States hereby retains all of its information gathering,
5 inspection, and enforcement authorities and rights under CERCLA,
6 RCRA, and any other applicable statutes or regulations.

7 108. Respondents shall be subject to civil penalties
8 under Section 106(b) of CERCLA, 42 U.S.C. 9606(b), of not more
9 than \$ 25,000.00 for each day in which Respondents willfully
10 violate, or fail or refuse to comply with this Order without
11 sufficient cause. In addition, failure to properly provide
12 response action under this Order, or any portion hereof, without
13 sufficient cause, may result in liability under Section 107(c)(3)
14 of CERCLA, 42 U.S.C. § 9607(c)(3), for punitive damages in an
15 amount at least equal to, and not more than, three (3) times the
16 amount of any costs incurred by the Fund as a result of such
17 failure to take proper action.

18 109. Nothing in this Order shall constitute or be
19 construed as a release from any claim, cause of action, or demand
20 in law or equity against any person for any liability it may have
21 arising out of, or relating in any way to, the Site.

22 110. If a court issues an order that invalidates any
23 provision of this Order or finds that Respondents have sufficient
24 cause not to comply with one or more provisions of this Order,
25 Respondents shall remain bound to comply with all provisions of
26 this Order not invalidated by the court's order.

1 XXVII. ADMINISTRATIVE RECORD

2 111. Upon request by EPA, Respondents must submit to
3 EPA all documents related to the selection of the response action
4 for possible inclusion in the administrative record file.
5

6 XXVIII. EFFECTIVE DATE AND COMPUTATION OF TIME

7 112. This Order shall be effective thirty (30) days
8 after the Order is signed by the Director of the Office of
9 Environmental Cleanup. All times for performance of ordered
10 activities shall be calculated from this effective date.
11

12 XXIX. OPPORTUNITY TO CONFER

13 113. Respondents may, within ten (10) days after the
14 date this Order is signed, request a conference with EPA's
15 Director of the Office of Environmental Cleanup to discuss this
16 Order. If requested, the conference shall occur on
17 February 5, 1996, at the Regional Office, 1200 Sixth Avenue,
18 Seattle, Washington.

19 114. The purpose and scope of the conference shall be
20 limited to issues involving the implementation of the response
21 actions required by this Order and the extent to which
22 Respondents intend to comply with this Order. This conference is
23 not an evidentiary hearing, and does not constitute a proceeding
24 to challenge this Order. It does not give Respondents a right to
25 seek review of this Order, or to seek resolution of potential
26 liability, and no official stenographic record of the conference
27

1 will be made. At any conference held pursuant to Respondents'
2 request, Respondents may appear in person or by an attorney or
3 other representative.

4 115. Requests for a conference must be by telephone
5 followed by a written confirmation mailed that day to Ted
6 Yackulic, Assistant Regional Counsel, 1200 Sixth Avenue SO-155,
7 Seattle, Washington 98101, (206) 553-8696.

8
9 So Ordered, this 25th day of January, 1996.

10
11 By:

Randall F. Smith
Randall F. Smith, Director
Office of Environmental Cleanup
U.S. Environmental Protection Agency



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

RECORD OF DECISION

COMMENCEMENT BAY SOUTH TACOMA CHANNEL

SOUTH TACOMA FIELD OPERABLE UNIT

U.S. Environmental Protection Agency

Region 10

SEPTEMBER 1994

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Commencement Bay South Tacoma Channel Superfund Site
South Tacoma Field Operable Unit
Tacoma, Washington

Statement of Basis and Purpose

This decision document presents the selected remedial action for the South Tacoma Field (STF) operable unit of the Commencement Bay South Tacoma Channel Superfund site located in Tacoma, Washington, which was chosen in accordance with Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site. The State of Washington concurs with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of the Selected Remedy

EPA divided the Commencement Bay south Tacoma Channel into three operable units (OUs) in order to facilitate the investigation, analysis and cleanup of this very large site. These operable units are:

City of Tacoma Well 12A (includes Time Oil)

Tacoma Landfill

South Tacoma Field

The remedy described in this ROD addresses the South Tacoma Field OU and involves the cleanup of contaminated soil and ground water at the site. The major components of the selected remedy are highlighted below.

The South Tacoma Field site was divided into three cleanup areas to aid in the development of cleanup alternatives. These areas are:

- South Tacoma Field (STF) soil
- Pioneer Builders Supply (subsurface soil and ground water)
- Tacoma City Light Dry Wells

The actions described below will address the threats posed by conditions in each of these three areas.

STF Soil

- Excavate and solidify contaminated soil (except for PCB contaminated soil) that exceeds hot spot concentration thresholds. Treated soil shall be placed back on site under a soil or asphalt cap.
- Soil contaminated with PCBs above 50 ppm was found in only one location at Pioneer Builders Supply. If additional sampling at this location confirms PCB concentrations above 50 ppm, then these soils shall be excavated and either incinerated at an approved, off-site incinerator or disposed off-site at a permitted hazardous waste disposal facility.
- Excavate, consolidate on-site and contain(cap) soils which exceed capping levels (Model Toxics Control Act (MTCA) Industrial Method A). The required excavation of soil would be limited to a maximum of one foot. If, after excavating a foot of soil, an area is still contaminated above MTCA industrial soil cleanup levels, the area will be capped. The Potentially Responsible Parties may continue excavating until contaminants in soil are below industrial cleanup levels, and thus avoid the requirement to cap in that area. Contaminated soils shall be capped with either soil or asphalt.
- Implement institutional controls (e.g., deed restrictions, access restrictions, fencing), to prohibit activities that may lead to exposure to contaminants and to protect capped areas.
- Conduct ground water monitoring, including monitoring of the petroleum hydrocarbon contamination found at the Amsted property. This is required to ensure that ground water levels stay below federal drinking water or MTCA based cleanup standards. Monitoring of the storm water run-on, runoff, surface water, and sediment in the wetland/drainage channel is also required. The monitoring program shall be reviewed every five years to determine whether additional actions are required or whether the monitoring program should be modified or discontinued.

Pioneer Builders Supply

- Implement air sparging and in situ vapor extraction in the vicinity of Pioneer Builders Supply to cleanup contaminated subsurface soil and ground water to achieve cleanup levels.
- Implement institutional controls in the form of restrictions on ground water use to non-drinking water purposes in the vicinity of Pioneer Builders Supply. This restriction shall continue until ground water cleanup levels are achieved throughout the contaminant plume and MTCA cumulative risk requirement of risks no greater than 1 in 100,000 and a Hazard Index no greater than 1 are also achieved.

- Conduct ground water monitoring as part of the cleanup remedy for this portion of the site. The monitoring program shall be reviewed every five years to determine whether additional actions are required or whether the monitoring program could be modified or discontinued.

Tacoma City Light Dry Wells

- Excavate contaminated soil with PCB concentrations above 50 ppm or endrin concentrations above 0.13 ppm and transport the soil off-site for incineration.
- Excavate and transport to an off-site, permitted hazardous waste disposal facility all soil with PCB, PAH and other chemical concentrations above the MTCA Method B residential cleanup levels.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. This remedy includes a treatment component for soil (and ground water at Pioneer Builders Supply) and satisfies the statutory preference for remedies that employ treatment as a principal element.

Because the remedy may result in hazardous substances remaining on-site above health-based levels, a review will be conducted every five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

Chuck Clarke

Chuck Clarke
Regional Administrator
U.S. EPA Region 10

9/29/94

Date

DECISION SUMMARY

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APPENDICES

Appendix A Responsiveness Summary

Appendix B Administrative Record Index

Appendix C State Concurrence Letter

LIST OF ACRONYMS USED IN THIS DOCUMENT

AOC	Area of Contamination
ARAR	Applicable or Relevant and Appropriate Requirements
BNR	Burlington Northern Railroad
CB/STC	Commencement Bay/South Tacoma Channel
CDI	Chronic Daily Intake
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)
CFR	Code of Federal Regulations
COC	Chemical of Concern
CPAH	Carcinogenic Polycyclic Aromatic Hydrocarbons
CRP	Community Relations Plan
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
HEAST	Health Effects Assessment Summary Tables
HHRAR	Human Health Risk Assessment Report
HI	Hazard Index
HQ	Hazard Quotient
IRIS	Integrated Risk Information System
LDRs	Land Disposal Restrictions
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
Mg/Kg	Milligrams/Kilograms (parts per million)
MTCA	Model Toxics Control Act
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PBS	Pioneer Builders Supply
PCBs	Polychlorinated Biphenyls
PPM	Parts per Million
PRP	Potentially Responsible Party
PSAPCA	Puget Sound Air Pollution Control Agency
RBSL	Risk Based Screening Level
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RfD	Reference Dose
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SF	Slope Factor
STF	South Tacoma Field
TCLP	Toxicity Characteristic Leaching Procedure
TIP	Tacoma Industrial Properties Management, Inc.
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act
Ug/L	Micrograms/Liter (parts per billion)
UST	Underground Storage Tank
WAC	Washington Administrative Code

DECISION SUMMARY

Commencement Bay/South Tacoma Channel Superfund Site South Tacoma Field Operable Unit Tacoma, Washington

1.0 SITE DESCRIPTION

The South Tacoma Field (STF) Superfund site is an operable unit (OU) of the larger Commencement Bay South Tacoma Channel Superfund (CB-STC) site. The CB-STC Superfund site was listed on the interim priority list by the U.S. Environmental Protection Agency (EPA) in 1981 as part of the overall Commencement Bay Superfund site. In 1983, EPA divided the Commencement Bay sites into two sites, Commencement Bay Nearshore/Tideflats and CB-STC and listed these two sites separately on the first National Priorities List (NPL).

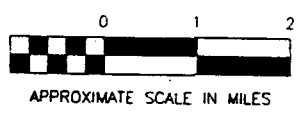
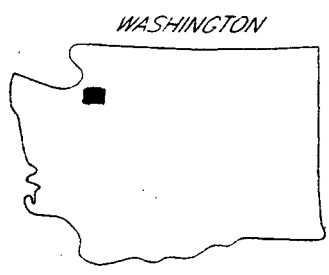
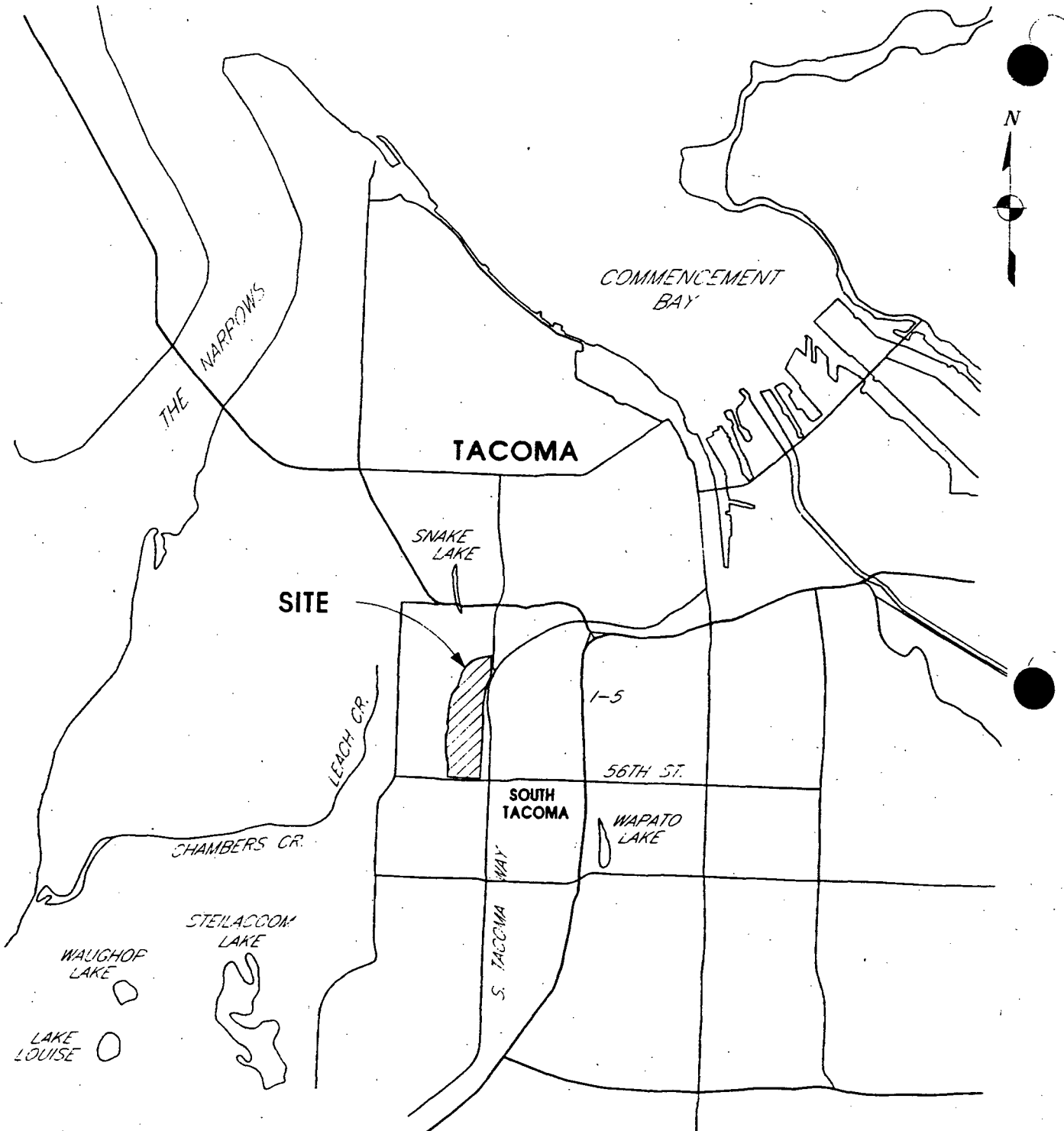
The STF Superfund site is a 260-acre parcel of land located in the southwestern part of the City of Tacoma, Washington (Figure 1-1). The site is located in a lowland area, which is as much as 150 feet lower than the surrounding uplands. The site is mostly open fields of grass with a few industrial and commercial facilities. The site also includes a former swamp and lake bed that has been filled in and covered with grass. A small wetland is also located in the area. Two City of Tacoma storm sewer outfalls discharge storm water onto the north end of the site. The storm water is conveyed across the western portion of the site in an open channel. The City of Tacoma operates several water supply wells within one half mile of the site that are used to augment the City's drinking water supply during peak (summer) demand periods.

2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 HISTORICAL LAND USE

The STF site has been used for a variety of industrial and commercial purposes for over 100 years. Locations where various activities have occurred at the site are shown in Figure 2-1. Areas where significant historical activities occurred are briefly discussed in the following paragraphs.

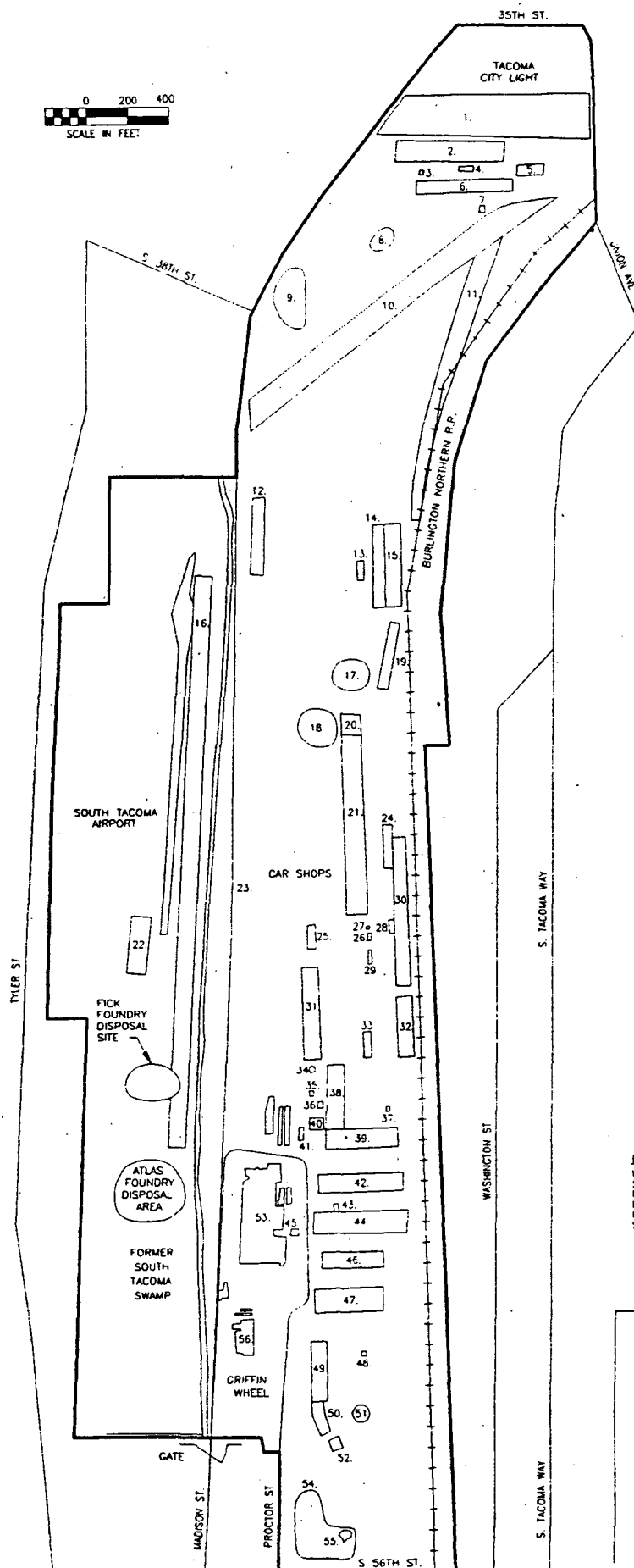
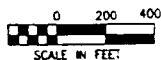
The South Tacoma Car Shops area operated as a railroad manufacturing and repair facility from 1892 until 1974. The area was used for manufacturing, repair, and maintenance of railroad equipment. Rail cars were also cleaned and dismantled in this area. Foundry facilities operated on-site from 1890 through 1980. An iron foundry produced iron wheels until 1957. A brass foundry produced journal bearings composed primarily of lead, tin, copper, zinc, and antimony until 1980. Aircraft maintenance and refueling operations



Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

FIGURE 1-1 SITE LOCATION MA



LEGEND

STF-NPL SITE BOUNDARY

1. TCL YARD AREA
2. GANTRY CRANE AREA
3. FUEL TANK
4. SHED
5. LANTERN SHED
6. STOREHOUSE, BELTHOUSE
7. FUEL CELLAR
8. BURN PIT
9. TRASH DUMP
10. STORAGE YARD
11. RUBBISH TRACK CORRIDOR
12. CONCRETE CASTING PLANT
13. SANDBLAST SHED
14. BLACKSMITH SHOP
15. CONCRETE FLOOR
16. LANDING STRIP
17. TRASH BURNING AREA
18. TRASH PIT (PAINT SHOP)
19. CAR CASTINGS PLATFORM
20. PAINT SHOP
21. CAR SHOP
22. AIRPORT BLDG
23. MADISON STREET
24. OPEN SHED
25. DRY KILN
26. WASTE SOAKING VAT
27. UST (OIL)
28. PAINT SHOP
29. PAINT HOUSE
30. FREIGHT REPAIR SHED
31. FINISHED LUMBER SHED
32. WHEEL SHOP
33. GENERATOR HOUSE
34. UST (OIL)
35. PUMPS
36. DIP TANK
37. DROP PIT
38. WOODWORKING SHOP
39. COACH SHOP
40. BOILER HOUSE
41. OIL TANKS
42. PAINT SHOP
43. BRASS
44. MACHINE SHOP
45. SOLVENT SHED
46. BOILER, TIN, TANK, AND COPPER SHOP
47. SOUTH MACHINE SHOP
48. TRASH BURNER
49. BLACKSMITH SHOP
50. IRON & STEEL STORAGE
51. TURNTABLE
52. COKE & COAL
53. FORMER IRON FOUNDRY
54. RAILCAR CLEANOUT AREA
55. BURIED DRUMS (REMOVED)
56. FORMER BRASS FOUNDRY SITE

BASE MAP REFERENCE
WALKER & ASSOC. 10-22-86
SURFACE DEBRIS SAMPLING PLAN
FEBRUARY 1987
FOR SITTS & HILL ENGINEERS, INC.
RETEC REMEDIATION TECHNOLOGIES, INC.
SOUTH TACOMA SWAMP

Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

FIGURE 2-1 MAJOR HISTORICAL
USES OF THE STF SITE

were performed at the South Tacoma Airport from 1936 to 1973. A lake was located beyond the south end of the former runway and, in the late 1940s, was used by seaplanes.

A variety of filling activities occurred during the history of the site. Foundry, construction, and domestic wastes reportedly were disposed of as fill material in the Former Swamp/Lakebed area. In the 1930s and 1940s, portions of the site reportedly were used as unauthorized dumping areas for household and commercial wastes.

2.2 CURRENT LAND USE

Much of the STF site is currently undeveloped and is covered with grasses, blackberry bushes, shrubs, and a few trees. Concrete rubble, old foundations, and trash are apparent in some areas. A portion of the STF site is used for light industrial and commercial operations. Some businesses have operated from facilities previously used in association with the former foundries and railyard, while other manufacturers have constructed new facilities. The site is zoned M-2, heavy industrial and is designated in Tacoma's South Tacoma Neighborhood Plan as an important part of the city's future industrial expansion area (City of Tacoma 1985). The industrial activities currently taking place at the site are presented in the following paragraphs. It is anticipated that future land use will remain industrial.

Tacoma Public Utilities (Tacoma City Light) provides electrical service and drinking water to Tacoma residents and businesses and has operated from the northernmost end of the STF site since 1953 (Figure 2-1). Tacoma Public Utilities uses its facility for maintenance and repair of equipment, as a storage and distribution center for electrical and water supply system components, and as an administration center. The Tacoma City Light property is covered with asphalt pavement and buildings. Storm water runoff from the Tacoma City Light property drains to modified dry wells that have soil bottoms and inter-connecting piping leading to the City of Tacoma's storm drainage system.

Tacoma Industrial Properties (TIP) Management, Inc., owns property in the south-central portion of the STF site, where an iron foundry was formerly located. TIP uses the area for a variety of industrial purposes. Two businesses operate on TIP property: KML Corporation and Savage Industries. KML Corporation has operated in the former iron foundry building since 1986. KML laminates films onto particle board for the construction of cabinets and interior partitions. Savage Industries has used a former wood patterns and vaults building since the early 1970s to manufacture wooden picture frames.

Facilities recently constructed on STF site property include the General Plastics and Pioneer Builders Supply complexes. General Plastics built a manufacturing plant in 1981 on a portion of the former Car Shops area. General Plastics manufactures high-density rigid and flexible polyurethane foams and high-density rigid polyisocyanurate foams for the aviation, construction, marine, nuclear, architectural, and sports equipment industries.

Pioneer Builders Supply purchased land in the southeast portion of the STF site for a warehouse and office building that were constructed in 1988. Pioneer Builders Supply operates a distribution center for asphalt and cedar roofing materials.

Pioneer Builders Supply used two underground storage tanks (USTs) for approximately five years to store gasoline and diesel fuel. Pioneer Builders Supply excavated the tanks in December 1991 and determined that the surrounding soil was contaminated with petroleum products. In addition, three USTs were discovered in the northeast corner of the Pioneer Builders Supply property in early 1990 and were excavated and disposed of in June 1990.

The City of Tacoma zoning maps designate most of the STF site as a "Heavy Industrial District." A narrow strip of land along the western edge of the site is zoned R-3-T, Residential-Commercial Transitional District. The site has been designated primarily for industrial use since at least the early 1950s. The majority of properties adjacent to the site are currently used or designated for industrial purposes. The area east of the site (between South 38th Street and South 56th Street) is a combination of Heavy Industrial, Light

Industrial, and Commercial districts. The area immediately south of the site is a combination of Heavy Industrial and Light Industrial districts.

The area west of the site is zoned for mixed uses. The southern section of the western border of the site is zoned Heavy Industrial. The central section of the western border contains Two-Family Dwelling, Medical Center Transitional, and Commercial districts. The northern portion of the western border consists primarily of a small Light Industrial district and a Residential/Commercial Transitional district. Despite its title, the latter district is designed primarily for office and institutional land uses according to the City of Tacoma. Many properties west of the site are separated from the industrial uses of the site by a natural buffer area along Tyler Street. That buffer consists of a bluff, steep slopes, a paved road, and vegetated areas along the western boundary of the site. The area north of the site consists of Light Industrial and Residential/Commercial Transitional districts. Again, the latter district is designed for office and institutional uses.

2.3 HISTORY OF EPA ENFORCEMENT ACTIVITIES

In 1987 EPA and Burlington Northern Railroad (BNR) signed an Administrative Order on Consent (Consent Order) under which BNR agreed to investigate the portion of the site owned by BNR. Soil sampling indicated that the property (about 200 acres) did not pose an immediate threat to public health or the environment. BNR then submitted a work plan for conducting a Remedial Investigation/Feasibility Study (RI/FS) on its property.

EPA reviewed BNR's work plan and decided that the site should be addressed as a whole in order to insure all contamination problems are comprehensively remediated. EPA completed a search for additional potentially responsible parties (PRPs), including land owners, businesses who may have operated at the site, and other businesses and individuals who brought hazardous wastes to the site. In 1989, EPA notified eight PRPs of their potential liability for the contamination at the site and requested their participation in conducting the RI/FS. These PRPs include: BNR, Glacier Park Company, Amsted Industries, Pioneer Builders Supply, Tacoma Public Utilities (City of Tacoma), TIP Management, Inc., Atlas Foundry, and General Plastics.

Also in 1989, EPA signed a Consent Order with Amsted Industries for demolishing the former brass foundry on their portion of the site because the building was contaminated with high levels of lead. Amsted completed the demolition work in 1990, and all of the debris was taken to a hazardous waste landfill.

In October 1990, EPA signed a Consent Order with a group of PRPs to conduct an RI/FS at the site. Initially, four PRPs signed the Order: BNR, Glacier Park Company (which has since sold back its portion of the site to BNR), City of Tacoma/Tacoma Public Utilities, and Pioneer Builders Supply. Subsequently, two additional PRPs signed the Consent Order: Amsted Industries and Tacoma Industrial Properties (TIP). Both of these PRPs own property at the site. Two other PRPs declined to participate in the RI/FS: General Plastics and Atlas Foundry. The results of the RI (Kennedy Jenks Consultants, 1993), along with the Human Health Risk Assessment (EPA 1993) were made public in July 1993. The FS was completed in 1994 (Kennedy Jenks Consultants, April 1994).

In 1991, during the course of the RI, the PRPs discovered petroleum hydrocarbon contamination in the subsurface soil and floating on the ground water on property owned by Amsted Industries. EPA and Amsted signed a Consent Order under which Amsted agreed to investigate the extent of contamination and to investigate potential cleanup actions. These studies were completed by Amsted in 1993.

3.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA developed a Community Relations Plan (CRP) for the Commencement Bay Nearshore Tidelands and CB-STC sites. The CRP was designed to promote public awareness of EPA activities and the investigations and

to promote public involvement in the decision-making process. The CRP summarizes the concerns of local citizens, interests groups, industries, and local government representatives. In 1991, EPA interviewed members of the community to gain a better understanding of citizen concerns about this site and to ensure that EPA's planned community relation activities met the community's needs. EPA supplemented the Tacoma Area CRP to reflect these needs and identified a variety of activities to inform and involve the public in the South Tacoma Field RI/FS activities leading up to this ROD.

EPA sent out numerous fact sheets during the course of the RI/FS process in an effort to keep the public informed about the progress and results of the investigation. The RI was released to the public in July 1993. EPA released the FS and Proposed Plan for cleanup in June 1994. The Proposed Plan, which identified EPA's preferred cleanup alternative, was mailed to each address contained on the South Tacoma Field mailing list. All of the documents mentioned above, as well as previous reports from earlier investigations, were made available to the public in the Administrative Record located at the locations listed below:

Tacoma Public Library
Main Library, Northwest Room
1102 Broadway
Tacoma, Washington 98402

U.S. Environmental Protection Agency
Region 10
Park Place Building
1200 Sixth Avenue, 7th Floor Records Center
Seattle, Washington 98101

EPA published a notice of the availability of these documents in the Tacoma News Tribune on June 12, 1994. EPA met with the Tacoma Environmental Commission on June 27, 1994, to discuss EPA's Proposed Plan for cleanup and to answer any questions from commissioners or the public. The public comment period on the Proposed Plan was held from June 15 through July 15, 1994. EPA held a public meeting on June 28, 1994, which was attended by about ten members of the public. At this meeting, representatives from EPA and the PRP's consultant gave presentations on, and then answered questions about the proposed cleanup and the remedial alternatives under consideration. The Responsiveness Summary, which is Appendix A of this ROD, contains EPA's responses to the written and oral comments that were received during the comment period. This decision is based on the Administrative Record for this site, which is included as Appendix B of this ROD.

4.0 SCOPE AND ROLE OF OPERABLE UNITS

In 1983, the CB-STC site was divided into three OUs: the City of Tacoma Well 12A (OU 1), Tacoma Landfill (OU 2), and STF (OU 3) in order to facilitate the investigation, analysis, and cleanup of this very large site. These three OUs are geographically separated, and the actions taken on the STF OU will not have an appreciable effect on environmental conditions at the other OUs. EPA has already selected remedies for the Tacoma Well 12A OU in a ROD dated May 3, 1985, and the Tacoma City Landfill OU in a ROD dated March 31, 1988. The selected remedies have been implemented at each site. These sites were addressed first in the process because of the potential or actual ground water contamination that was a threat to human health.

The third OU, the STF site, is the subject of this ROD. The ROD addresses soil and ground water contamination at the STF site. Potential ingestion of surface soil or ingestion of ground water pose the principal risk to human health because EPA's acceptable risk range is exceeded in some site soil, and concentrations in ground water are consistently greater than maximum contaminant levels (MCLs) near Pioneer Builders Supply. The purpose of this response is to prevent current or future exposure to

contaminated soil and ground water. Remedial actions at the STF OU will be the final response actions under CERCLA to be implemented at the three OUs that make up the Commencement Bay/South Tacoma Channel site.

5.0 SUMMARY OF SITE CHARACTERISTICS

This section describes the sources of contamination, the nature and distribution of contaminants at the site, and potential contaminant migration pathways. Detailed information on the site characteristics and the nature and extent of contamination can be found in the RI, Volumes 1-6.

5.1 SOIL CONDITIONS

The majority of the site is covered by a thin layer (i.e., six inches or less in thickness) of organic topsoil underlain by comparatively organic-free unconsolidated sediment. These underlying materials are of both natural and anthropogenic origin.

Due to the historical industrialization of the site and subsequent demolition of most pre-existing structures on the STF site, most of the near surface soil at the site has been disturbed. Despite the grading that has occurred over much of the site, natural processes have resulted in the formation of a thin topsoil in these areas. Fill materials have been mixed with natural soil. Based on the appearance of the overlying topsoil alone, fill areas are generally indistinguishable from other areas underlain by naturally deposited sediments. The topsoil or loam in areas that are underlain by undisturbed soil is typically less than six inches thick and consists of black to brown sand with some silt and organic matter.

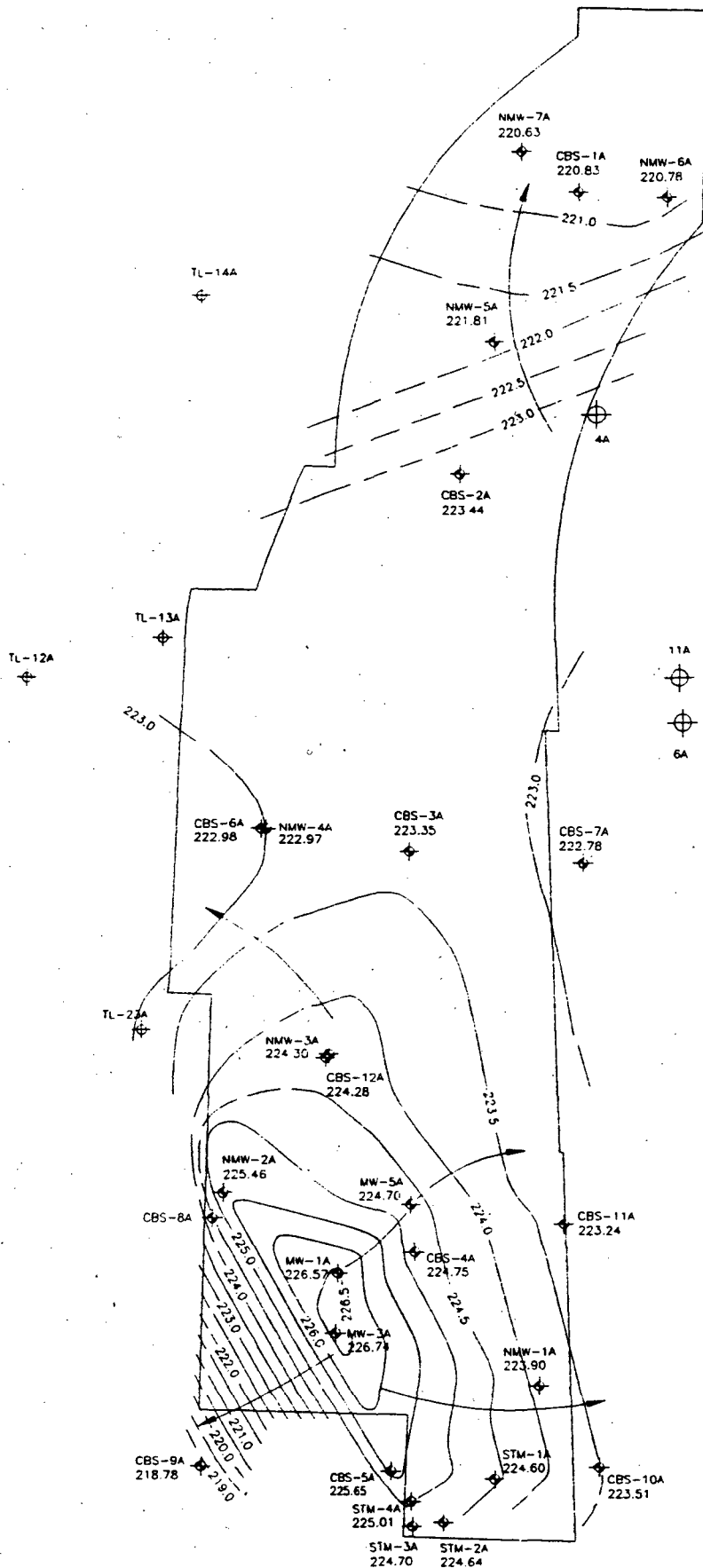
Most of the soil has been disturbed and, at least in part, is composed of fill materials. Fill materials generally ranged from one to three feet in thickness; however, some areas of the site contain fill materials up to 15 feet thick. These areas include portions of the Amsted property and portions of the Former Swamp/Lakebed. Fill materials in the southern end of the BNR Railyard are generally about six feet thick but reach a thickness of about eight feet in some areas. The western and northern portions of the TIP property also have areas where fill reaches thicknesses of up to eight feet.

5.2 GROUND WATER AND SURFACE WATER CONDITIONS

In general, the regional ground water system in the uppermost unconfined aquifer (upper aquifer) is characterized by recharge in the Fircrest/Tacoma upland with shallow ground water flow east to the Puyallup River Valley and west to Puget Sound. The STF site is located within the Clover/Chambers Creek surface water drainage basin (Figure 1-1). Based on available data, the STF site lies within a ground water recharge area. Information gathered during the RI indicates that precipitation and surface water from the open channel in the western portion of the site does not typically flow off-site as surface water, except during major rainfall events. Instead, surface water dissipates by evaporation, transpiration, and infiltration downward through soil and sediment to recharge the upper aquifer.

The upper aquifer at the STF site occurs within the Colvos Sand unit. The top of the upper aquifer was encountered at depths ranging from near ground surface in the Former Swamp/Lakebed area to approximately 35 feet below ground surface in the southeastern portion of the site. The depth to the upper aquifer varies seasonally, by as much as ten feet, over much of the site. These seasonal variations in depth to the upper aquifer are dependent on climatic conditions and pumping of the City of Tacoma drinking water production wells located just east of the site.

Based on available potentiometric surface data for the upper aquifer, a natural ground water divide is located in the vicinity of the South Tacoma Channel. This divide shifts to the west toward or in the vicinity of the Tacoma Landfill when the City of Tacoma production wells are pumping (Black and Veatch 1987) and the direction of ground water flow is toward the City of Tacoma wells. Figures 5-1 and 5-2 show the variation



NOTES:

1. CONTOUR LINES WERE PLOTTED USING A TRIANGULAR IRREGULAR NETWORK PROGRAM (DCTIN V. 2.2D); MODIFIED AS NECESSARY.
2. CBS-8A WAS SUBMERGED IN SURFACE WATER DURING THIS MONITORING EVENT.
3. ALL LOCATIONS ARE APPROXIMATE.
4. ALL CONTOURS ARE INFERRED.

LEGEND

- | | |
|------------------|---|
| NMW-1A
223.90 | MONITORING WELL LOCATION WITH WATER LEVEL ELEVATION IN FEET ABOVE MEAN SEA LEVEL (CITY OF TACOMA NOVD 29 VERTICAL DATUM). |
| TL-12A | TACOMA LANDFILL UPGRADIENT WELL LOCATIONS. |
| 4A | TACOMA PUBLIC UTILITIES PRODUCTION WELL LOCATIONS. |
| — 223.0 — | APPROXIMATE WATER LEVEL ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL. |
| | ESTIMATED HYDRAULIC GRADIENT DIRECTION. |

Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

FIGURE 6-1 WATER LEVEL CONTOUR
MAP OF UPPER AQUIFER, 11 APRIL 1991

in ground water flow direction when the City of Tacoma production wells typically are not in use (Figure 5-1), and after pumping has occurred for most of the summer months (Figure 5-2). The presence of this divide in the vicinity of the South Tacoma Channel is likely due in part to the absence of the poorly transmissive glacial till unit that typically overlies the Colvos Sand in the region. The more highly transmissive Colvos Sand is exposed in the South Tacoma Channel and should promote more rapid infiltration of precipitation and surface water into the upper aquifer at the site.

During times when the City of Tacoma was not pumping (April and early May 1991), water level data indicated the formation of a potentiometric "mound" in the upper aquifer in the southern portion of the site (Figure 5-1). A recharge mound was centered in the vicinity of the Amsted property during the April 1991 ground water level monitoring event.

Figure 5-3 presents surface water hydrologic features for the STF site. Although no perennial creeks, streams, or rivers flow through the STF site, a surface water (storm water) drainage channel is located below the bluff along the western portion of the site. The primary source of surface water entering this drainage channel is storm water runoff from residential and industrial areas that discharge from two storm drain outlets (i.e., northern and southern outfalls) along the northwest boundary of the site (Figure 5-3). The storm drain system is owned and operated by the City of Tacoma.

The on-site drainage channel crosses east through the south end of the STF site and feeds into a storm drain culvert. Water is not usually present in the southern portion of the channel except in response to heavy rains. The channel continues off-site for 500 feet along Madison Street to approximately 150 feet north of South 56th Street, at which point the open channel enters a 72-inch storm drain. According to the RI (Kennedy Jenks Consultants, Volume 5) an estimated 100 million gallons of storm water enter the site, and only about 15 million gallons leave the site. Surface water from the STF site, combined with other sources of surface water, discharges from the trunk storm drain to the Flett Creek storm basin approximately 1.4 miles south of the site. Approximately three miles farther down-stream, Flett Creek discharges into Chamber Creek, which leads to Chambers Bay on Puget Sound.

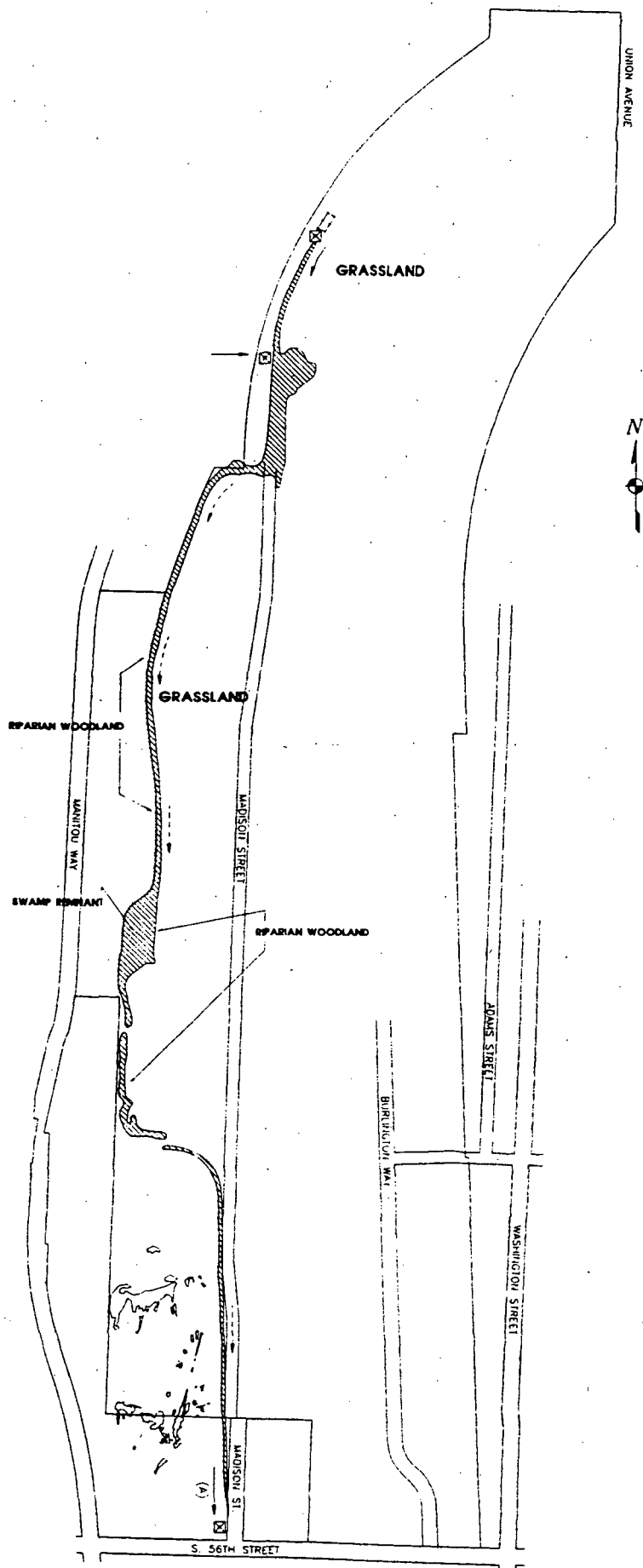
A perennial wetland and a possible remnant of the South Tacoma Swamp are located along the on-site drainage channel. The wetland and swamp remnant are primarily supported by storm water runoff from the surface channel. These areas contain standing water through most of the year and support perennial wetland and riparian woodland ecosystems.

5.3 NATURE AND EXTENT OF CONTAMINATION








During the Remedial Investigation (RI) of the STF site, surface and subsurface soil, ground water, sediment and surface water (including storm water) were sampled and analyzed for metal (inorganic) and organic chemicals. In all, over 1,000 soil, ground water, storm water, surface water, and sediment samples were collected and analyzed as part of the RI. This section summarizes the results of the RI report for the STF site.

As part of the remedial investigation, the STF site was divided into seven areas for sampling purposes. Soil, ground water, and surface water were sampled extensively to determine the nature and extent of contamination. These seven sampling areas (shown in Figure 5-4) include:

- Amsted Property
- BNR Dismantling Yard
- BNR Railyard
(includes Pioneer Builders Supply area)
- Tacoma Industrial Properties
- Former Swamp/Lakebed Area
- Former Airport Area
- Tacoma City Light



LEGEND

-  RIPARIAN WOODLAND
-  PERENNIAL WETLAND
-  SEASONAL WETLAND
-  STORM DRAINS (APPROXIMATE LOCATION)
-  OBSERVED SURFACE WATER FLOW DIRECTION
-  INFERRED SURFACE WATER FLOW DIRECTION
-  (A) OBSERVED OFFSITE FLOW ON ONLY FOUR OCCASIONS

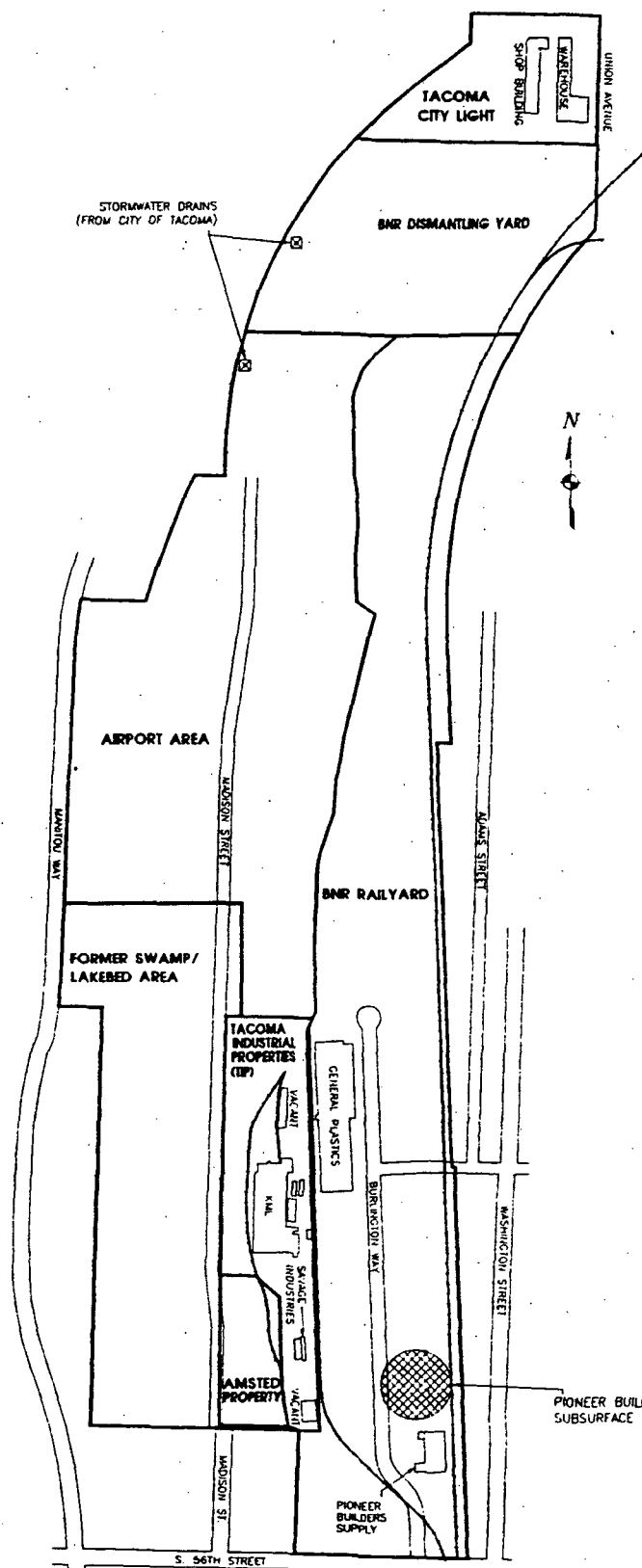
BASE MAP REFERENCE

KENNEDY/JENKS CONSULTANTS AND
LSA ASSOCIATES (1997)

Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

**FIGURE 5-3 BOUNDARIES OF JURISDICTIONAL WETLANDS
AND LOCATIONS OF STORMWATER DISCHARGES**



LEGEND

REMEDIATION AREAS

- PIONEER BUILDERS SUPPLY - SUBSURFACE
- TACOMA CITY LIGHT
- OTHER AREAS OF THE STF SITE

PROPERTY OWNERSHIP

- PIONEER BUILDERS SUPPLY - PIONEER BUILDERS SUPPLY CO.
 - TACOMA CITY LIGHT - TACOMA PUBLIC UTILITIES
 - BNR DISMANTLING YARD
 - BNR RAILYARD
 - AIRPORT AREA
 - FORMER SWAMP/LAKEBED AREA
 - AMSTED PROPERTY - AMSTED INDUSTRIES, INC.
 - TACOMA INDUSTRIAL PROPERTIES - TIP MANAGEMENT, INC.
 - GENERAL PLASTICS - GENERAL PLASTICS MANUFACTURING CO
- } BURLINGTON NORTHERN RAILROAD

250' 100' 0' 250' 500' 750'
APPROXIMATE SCALE IN FEET

Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

FIGURE 5-4 PROPERTY UNIT DESIGNATIONS
AND REMEDIATION AREAS AT THE STF SITE

5.3.1 Soil

Surface soil, and to a lesser extent subsurface soil, in these areas are contaminated with high levels of lead, arsenic, copper, and zinc, particularly at the Amsted property and the Burlington Northern Railyard and Dismantling Yard. The metals occur in an irregular pattern that is probably related to specific historical activities. Figure 5-5 shows the distribution of the lead concentrations over the site. This figure illustrates the irregular distribution with the highest concentrations of lead predominately located on the Amsted Property and the BNR Dismantling Yard and Railyard. Polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) were also detected in some surface and subsurface soil samples.

Concentrations of arsenic, beryllium, and cadmium are also elevated, but to a lesser degree than copper, lead, and zinc. Antimony, barium, chromium, cobalt, iron, manganese, mercury, and nickel displayed the least elevation over background concentrations in these areas. Metal concentrations in surface soil samples from the Former Swamp/Lakebed area are elevated, but to a lesser degree than those from the other areas. PAHs were also detected in surface soil throughout the site at relatively low to moderate concentrations. Elevated PAH concentrations were detected in some areas where elevated concentrations of metals occurred (i.e., the Amsted property, BNR Dismantling Yard, BNR Railyard, and Former Swamp/Lakebed).

Elevated concentrations of PAHs, PCBs, and several other organic chemicals were detected in subsurface soil sampled at and underlying the bottoms of some of the dry wells at the Tacoma City Light property. Elevated concentrations of most chemicals were limited to an area within a few feet vertically and horizontally around the bottoms of the dry wells.

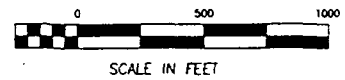
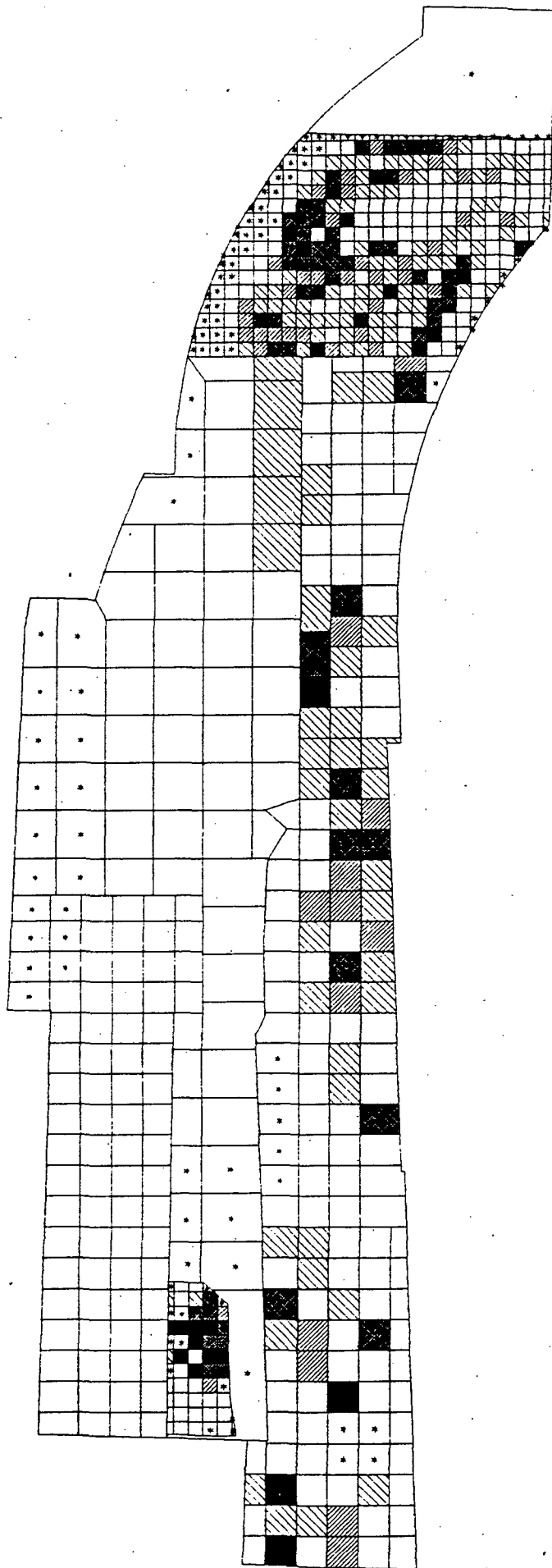
At Pioneer Builders Supply, elevated concentrations of 1,2,4-trichlorobenzene, PCBs, and petroleum hydrocarbons were detected in subsurface soil samples in the unsaturated zone beneath and immediately surrounding the location where three USTs were removed. The petroleum hydrocarbons detected were toluene, xylenes, and ethyl benzene, which are constituents of gasoline.

Table 5-1 presents the concentration ranges, mean concentrations for chemicals in soil at the STF portion of the site, in the Tacoma City Light dry wells and the surface soil at Pioneer Builders Supply. Due to the large volume of soil data collected, only Chemicals of Concern (COC)s, as identified in the Human Health Risk Assessment, are included in these tables. A complete list of chemicals, concentrations, and distribution in the soil can be found in Volumes 1 and 2 of the RI.








5.3.2 Ground Water

Ground water samples from 26 on and off-site monitoring wells were collected during the ground water investigation portion of the RI (RI, Volume 4), which included four quarterly sampling events. These 26 wells, and other nearby, off-site monitoring wells also used in the ground water investigation, are shown in Figures 5-1 and 5-2. The RI ground water analytical results do not indicate the presence of a site-wide contaminant plume in ground water, but four localized areas of the site were identified where appreciable variations in shallow ground water chemical quality occurred:

- The first area is the Pioneer Builders Supply property where the concentrations of ethyl benzene, 1,1,2-trichloroethane, and benzene were detected at concentrations above the current or proposed federal maximum contaminant levels (MCLs). These chemicals and a number of other hydrocarbon compounds detected in ground water at this location may be attributed to a release(s) from the former USTs that were removed from this area.
- The second and third areas include contiguous portions of the Airport and Former Swamp/Lakebed areas, and the former railcar clean out area in the south end of the BNR Railyard. Concentrations of a few inorganic constituents in these areas occasionally exceeded MCLs and secondary drinking water standards (for iron and manganese).



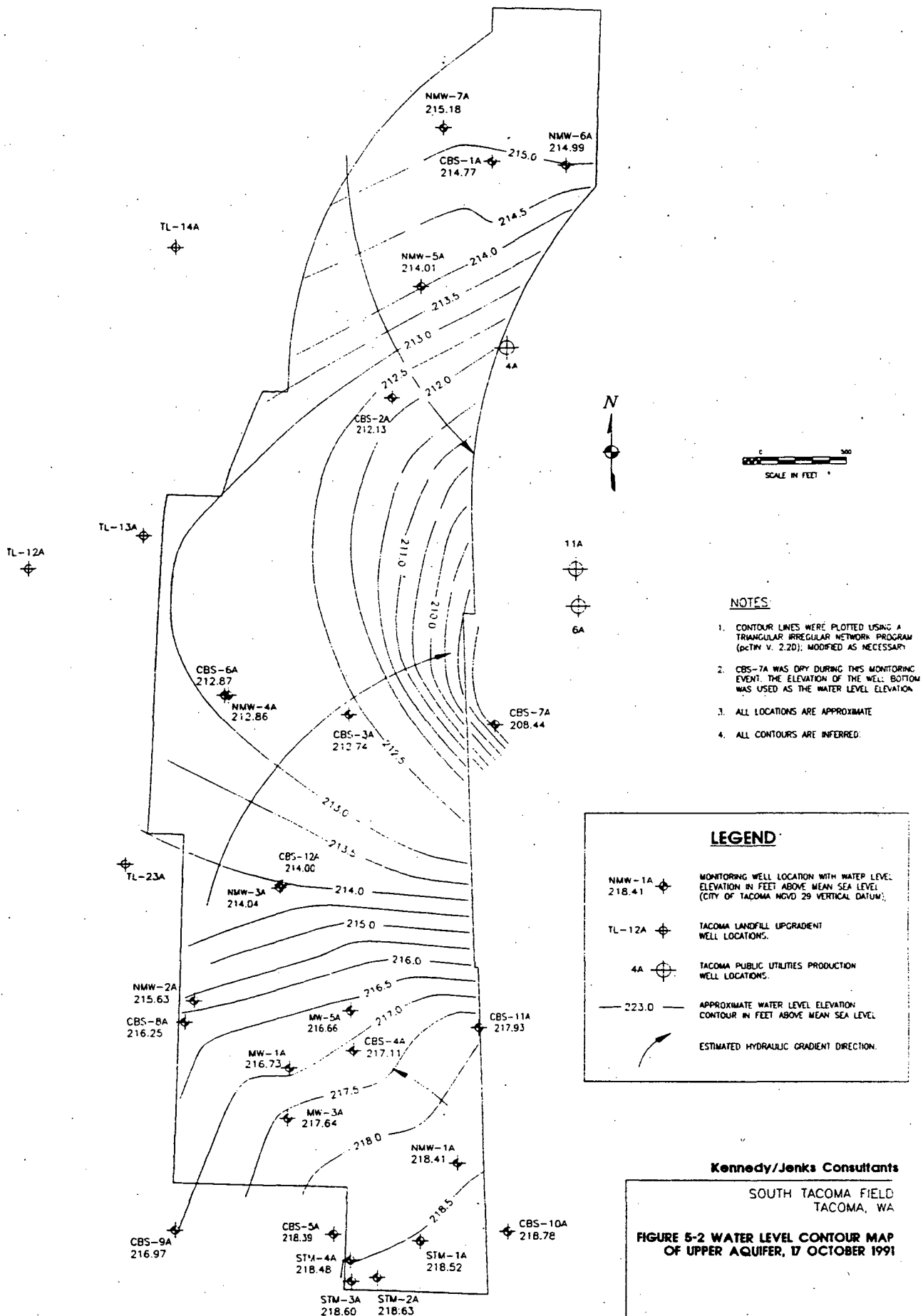
LEGEND

-  LOCATION NOT SAMPLED OR DATA NOT AVAILABLE
-  0 TO <200 mg/kg
-  200 TO <610 mg/kg
-  610 TO <1,600 mg/kg
-  1,600 TO <2,700 mg/kg
-  2,700 TO <10,000 mg/kg
-  ≥ 10,000 mg/kg

Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

FIGURE 5-5 LEAD DISTRIBUTION IN
SURFACE SOIL



Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

TABLE 5-1

**CHEMICAL CONCENTRATION RANGES AND MEAN CONCENTRATIONS
FOR SURFACE AND SUBSURFACE SOIL AT STF AREAS
AND TACOMA CITY LIGHT DRY WELLS**

Chemicals (a)	STF Site Areas (mg/kg) (b,c,d)			Tacoma City Light Dry Wells (mg/kg) (c,d)		
	Range	Mean	Distribution ^(e)	Range	Mean	Distribution ^(e)
Inorganics						
Aluminum	1,350-178,000	14,100	NP	-- ^(f)	NA ^(g)	NA
Antimony	1.2-1,150	14.7	NP	1.2-15.6	4.0	NP
Arsenic	0.12-696	12.4	LN	1.1-133	9.8	NP
Beryllium	0.090-14.4	0.53	LN	--	NA	NA
Cadmium	0.075-29.9	0.96	LN	0.11-2.4	0.31	NP
Chromium (total)	2.9-896	50.3	NP	12.4-2,300	100	NP
Copper	5.8-163,000	1,160	NP	--	NA	NA
Lead	1.1-118,000	179	LN	1.0-838	41.1	NP
Manganese	22.7-27,000	866	NP	--	NA	NA
Mercury	0.0036-5.3	0.22	NP	0.0018-0.40	0.058	NP
Vanadium	0.34-529	46.8	NP	--	NA	NA
Zinc	11.0-61,600	1,090	NP	--	NA	NA

TABLE 5-1 (Continued)

**CHEMICAL CONCENTRATION RANGES, AND MEAN CONCENTRATIONS
FOR SURFACE AND SUBSURFACE SOIL AT STF AREAS
AND TACOMA CITY LIGHT DRY WELLS**

Chemicals (a)	STF Site Areas (mg/kg) (b,c,d)			Tacoma City Light Dry Wells (mg/kg) (c,d)		
	Range	Mean	Distribution (e)	Range	Mean	Distribution (e)
Organics						
Aldrin	--	NA	NP	0.0042-9.5	0.28	NP
Carbazole	--	NA	NP	0.11-120	3.6	NP
Carcinogenic PAHs (total)	0.0040-42.4	0.33	LN	0.040-141	4.5	NP
1,3'-Dichlorobenzene	--	NA	NP	0.18-28.0	1.0	NP
1,4'-Dichlorobenzene	--	NA	NP	0.020-28.0	1.1	NP
3,3'-Dichlorobenzidine	0.043-9.7	0.68	NP	0.18-28.0	1.5	NP
PCBs (total)	0.17-56.0	8.6	NP	0.10-840	5.8	LN
Pentachlorophenol	--	NA	NP	0.24-150	4.7	NP
Phenanthrene	--	NA	NP	0.0050-150	4.0	NP

(a) Reference: ICF (1993).

(b) STF areas include BNR Dismantling Yard, BNR Railyard (including surface soil at Pioneer Builders Supply), Amsted property, Former Swamp/Lakebed, Airport, and TIP. The STF Human Health Risk Assessment Report (ICF 1993) did not identify chemicals of concern in subsurface soil based on exposure via ingestion for Pioneer Builders Supply.

(c) Concentrations from Kennedy/Jenks Consultants (1993b,c).

(d) Undetected analytes may be included as one-half of the detection limit for the minimum concentration.

(e) LN indicates a lognormal sample distribution; geometric mean is reported. NP indicates a nonparametric sample distribution; arithmetic mean is reported.

(f) "--" = Not a chemical of concern.

(g) NA = Not statistically analyzed.

- The fourth area includes the Amsted property where a relatively small volume of nearly immiscible, heavy fuel oil was encountered floating on the surface of the water table. The hydrocarbon contamination in this area was investigated under a separate Consent Order with EPA Region 10.

Table 5-2 lists COCs for ground water in the STF area and Pioneer Builders Supply. Table 5-3 lists chemicals found in the ground water related to the petroleum product found at the Amsted Property. A complete listing of chemicals found in ground water at the site can be found in Volume 4 of the RI, and in the Subsurface Investigation, Former Griffin Wheel Brass Foundry Final Report, Amsted Industries (Kennedy/Jenks Consultants 1992).

During the Feasibility Study, additional soil and ground water data were collected to confirm that leaching of inorganic chemicals does not pose a threat to ground water. The additional data included results from:

- Collecting two rounds (November 1993 and February 1994) of ground water samples from four new monitoring wells installed where lead concentrations were elevated in subsurface soil.
- Performing a column leaching test on soil from the BNR Dismantling Yard and the Amsted Property and using the data to model the mobility of lead in STF site soil.

Lead was chosen as the indicator chemical for these tests due to the high volume (and concentration) of lead contaminated soil at the site.

The ground water wells were screened (over a five-foot interval) at the top of the water table to determine the concentration of lead in ground water immediately below the unsaturated zone. Detected concentrations of lead in ground water samples at the top of the aquifer were comparable to the concentrations found in the ground water during the RI, at wells which were screened over a greater interval (10-20 feet) and at deeper portions of the aquifer.

The purpose of the column leaching test was to look at the potential migration of lead from contaminated soil, through a cleaner layer of underlying soil, into the ground water. The data were used in the model SESOIL and VLEACH to assess the long term potential for ground water impacts resulting from the presence of lead at the site.

The modelling results provided evidence that lead is leached slowly from the contaminated soil and then is quickly adsorbed with a relatively short vertical distance in the underlying soil. Modelling of soil from both the BNR Dismantling Yard and the Amsted Property data indicated that after 99 years, the average predicted chemical migration front depth would be less than half an inch in the lower soil zone. After 500 years, the chemical migration front depth is predicted to be less than two feet below the upper soil zone. The information collected during these investigations confirmed previous RI data that lead migration in the soil does not pose a threat to ground water quality at the STF site.

5.3.3 Surface Water and Sediment

This portion of the RI characterized the types and concentration of chemicals detected in surface water and sediment samples collected from the wetland/drainage channel area (Figure 5-3). The major source of contamination in on-site surface water and sediment is surface water run-on from two storm drain outfalls that drain nearby areas of the city. The detected concentrations are characteristic of urban runoff. Inorganic chemicals detected in storm water run-on samples were generally detected at higher concentrations than those detected in monthly (base flow) run-on samples with the exception of major cations (calcium, magnesium, potassium, and sodium). These major cations were detected at higher concentrations in the monthly surface water run-on samples. The metals in on-site surface water samples were generally detected at higher concentrations in the vicinity of and directly downstream from the storm water outfalls than in the samples collected throughout the remainder of the downstream channel. EPA acute fresh water quality

TABLE 5-2

**CHEMICAL CONCENTRATION RANGES AND MEAN CONCENTRATIONS
FOR GROUNDWATER AT STF AREAS AND PIONEER BUILDERS SUPPLY**

Chemical (a)	STF Site Areas (µg/L) (b,c,d)			Pioneer Builders Supply (µg/L) (c,d)		
	Range	Mean	Distribution(e)	Range	Mean	Distribution(e)
Inorganics						
Aluminum (f)	8.0-5,940	50.2	LN	--(f)	NA(g)	NA
Antimony	5.5-50.7	14.6	NP	--	NA	NA
Arsenic	0.50-50.9	2.1	LN	6.2-13.8	10.1	LN
Boron	8.7-1,940	183	LN	447-613	501	LN
Cobalt	1.5-218	5.4	NP	--	NA	NA
Copper	0.5-19.7	2.3	NP	--	NA	NA
Manganese	0.50-4,160	24.4	LN	3,410-5,200	4,547	LN
Nickel	3.4-1,950	33.3	NP	--	NA	NA
Selenium	0.50-26.8	1.7	NP	--	NA	NA
Silver	1.5-10.6	2.5	NP	--	NA	NA
Vanadium	1.7-30.5	4.3	NP	--	NA	NA
Zinc	1.0-726	19.8	NP	--	NA	NA
Organics						
Benzene	--	NA	NA	86.0-480	240	LN
Bromodichloromethane	2.0-5.0	5.0	NP	--	NA	NA

TABLE 5-2 (Continued)

**CHEMICAL CONCENTRATION RANGES AND MEAN CONCENTRATIONS
FOR GROUNDWATER AT STF AREAS AND PIONEER BUILDERS SUPPLY**

Chemical (a)	STF Site Areas ($\mu\text{g/L}$) (b,c,d)			Pioneer Builders Supply ($\mu\text{g/L}$) (c,d)		
	Range	Mean	Distribution(e)	Range	Mean	Distribution(e)
Organics (continued)						
Chloroform	1.0-20.0	5.0	NP	--	NA	NA
2,4-Dimethylphenol	--	NA	NA	5.0-61.0	17.5	LN
Ethylbenzene	--	NA	NA	150-1,000	482	LN
Hexanone	--	NA	NA	5.0-50.0	23.6	LN
2-Methylnaphthalene	--	NA	NA	15.0-47.0	28.5	LN
Naphthalene	--	NA	NA	30.0-190	84.3	LN
Tetrachloroethene	3.0-5.0	4.9	NP	--	NA	NA
Toluene	--	NA	NA	51.0-770	253	LN
1,1,2-Trichloroethane	--	NA	NA	5.0-51.0	23.8	LN
Trichloroethene	1.0-6.0	4.8	NP	--	NA	NA
Xylenes (total)	--	NA	NA	141-2,300	783	LN

- (a) Reference: ICF (1993).
 (b) STF areas include BNR Dismantling Yard, BNR Railyard, Amsted property, Former Swamp/Lakebed, Airport, and TIP.
 (c) Concentrations from Kennedy/Jenks Consultants (1993b,c).
 (d) Undetected analytes may be included as one-half of the detection limit for the minimum concentration.
 (e) LN indicates a lognormal sample distribution; geometric mean is reported. NP indicates a nonparametric sample distribution; arithmetic mean is reported.
 (f) "--" = Not a chemical of concern.
 (g) NA = Not statistically analyzed.

criteria were exceeded in surface water samples collected during the investigation for the chemical shown in Table 5-4.

Table 5-3

**Chemicals of Concern in Ground Water
at the Amsted Property**

CHEMICAL	MAXIMUM CONCENTRATION DETECTED IN GROUNDWATER ug/L
Acenaphthene	1.0J
Carbazole	0.6J
Fluoranthene	4.3
Fluorene	2.0J
2-Methylnaphthalene	5.0J
Naphthalene	3.0J
Phenathrene	2.9
Pyrene	4.0

J is a laboratory qualifier that indicates estimated value

Table 5-4

Chemicals Exceeding Acute Fresh Water Quality Criteria

Chemical	Maximum Concentration ug/L
Aluminum	80,900
Cadmium	18.3
Copper	2,980
Lead	219
Silver	10.8
Zinc	3,160

Run-off from the site was generally of better quality than run-on, and the quantity of runoff was significantly less than the estimated run-on. Detailed information on the quality of storm water run-on and run-off can be found in Volume 5 of the RI.

Elevated concentrations of several chemicals were consistently detected in on-site sediment, as listed in Table 5-5.

Table 5-5
Chemicals Consistently Detected in On-site Sediment

Chemical	Maximum Concentration mg/kg
Arsenic	93.8
Cadmium	18.0
Chromium (total)	614.0
Copper	884.0
Lead	2050.0
Mercury	1.6
Zinc	2460.0
Carcinogenic PAH	200.0

Detailed information on the chemicals found in sediments, including concentration ranges and distribution in the wetlands/drainage channel can be found in Volume 5 of the RI.

6.0 SUMMARY OF SITE RISKS

The Human Health Risk Assessment Report (HHRAR) for the STF site was prepared to address the human health risks from site contamination (EPA 1993). The HHRAR evaluated risks due to contamination in surface soil, ground water, surface water, and sediment at the site. The HHRAR is an evaluation of the risks that potentially exist if no remedial action were undertaken on the site. The results of the HHRAR are also used to decide whether remedial action is appropriate and which exposure pathways require remediation. This section of the ROD reports the results of the baseline risk assessment conducted for this site, which was completed according to EPA Region 10 risk assessment guidelines.

The STF HHRAR covers six areas within the STF site: Dismantling Yard, Railyard, Amsted property, Airport, Swamp, and the TIP.

The STF HHRAR and the summary of site risks presented in this ROD (Sections 6.1 through 6.5) are composed of five sections: identification of chemicals of concern (COC), exposure assessment, toxicity assessment, and risk characterization, which is an integration and summary of the information gathered and analyzed in the preceding sections, and an analysis of the uncertainty in developing a HHRAR. A summary of the ecological HHRAR findings is presented in Section 6.6.

6.1 IDENTIFICATION OF CHEMICALS OF CONCERN

COC were identified for surface and subsurface soil based on incidental ingestion and on the potential for infiltration to ground water, and for ground water, surface water, and sediments, and air. The methods used to identify COC for each environmental medium of concern are discussed in detail in the HHRAR. The COC identified in the HHRAR at the site are as follows:

6.1.1 Surface and Subsurface Soil

For the identification of COC in surface and subsurface soil, the maximum concentration of a chemical in the soil was compared to the risk-based screening level (RBSL) for that chemical. RBSLs were calculated based on guidance published in the EPA Region 10 Supplemental Risk Assessment Guidance for Superfund (August 16, 1991). The RBSL for chemicals observed in soil is equivalent to the concentration of a given chemical that yields an excess lifetime cancer risk of 1×10^{-7} or a noncancer hazard quotient of 0.1, whichever is less, when exposure occurs by the ingestion route. According to EPA guidance, other potential routes of exposure, e.g., inhalation or dermal contact, are accounted for by reducing the basis of the RBSL from 1×10^{-6} to 1×10^{-7} . An RBSL could not be calculated for lead; therefore, the soil cleanup level for lead of 500 mg/kg (residential) or 1,000 mg/kg (industrial) was used as the screening level (OSWER Directive 9355.4-02).

The list of COC identified by comparison to RBSLs was further refined by consideration of the frequency of detection, and for metals, a comparison of background concentrations. Chemicals that exceeded their RBSLs in no more than three samples from a sampling area were eliminated as COC for that area. For background comparisons, a chemical whose maximum measured concentration exceeded the maximum background concentration for that chemical no more than once was eliminated as a chemical of concern.

A complete list of the surface and subsurface soil COC retained for consideration in the risk assessment can be found in the HHRAR (EPA 1993). The most significant of these chemicals from a human health perspective are listed for each sampling area below:

- Dismantling Yard - arsenic, beryllium, cadmium, chromium, lead, mercury, PAHs, and PCBs;
- Railyard - arsenic, beryllium, cadmium, chromium, lead, mercury, PAHs, and PCBs;
- Amsted Property - arsenic, beryllium, cadmium, chromium, lead, manganese, and mercury;
- Airport - arsenic, cadmium, chromium, lead, mercury, and PAHs;
- Swamp - arsenic, beryllium, cadmium, chromium, and PAHs; and
- TIP - PAHs.

6.1.2 Ground Water

For the identification of COC in ground water, the maximum concentration measured for a given chemical for each well for each quarter was compared to an RBSL. If a chemical exceeded its RBSL for a given well for a given quarter, that chemical was retained for further consideration.

RBSLs for ground water were calculated based on guidance published in the EPA Region 10 Supplemental Risk Assessment Guidance for Superfund (August 16, 1991). The RBSL for a chemical observed in ground water is equivalent to the concentration of a given chemical that yields an excess lifetime cancer risk of 1×10^{-6} or a noncancer hazard quotient of 0.1, whichever is less. The RBSL calculation for ground water includes the ingestion and inhalation routes of exposure. An RBSL could not be calculated for lead in ground water; therefore, the lead MCL (15 $\mu\text{g/L}$) was used as the screening level.

The list of chemicals of potential concern identified by comparison to RBSLs was further refined by comparison to background concentrations measured in four background wells. Chemicals with maximum measured concentrations that exceeded their background concentration for any quarter were retained as COC for the well in which they were observed.

A complete list of the ground water COC retained for consideration in the risk assessment are presented in the HHRAR (EPA 1993). The most significant of these chemicals from a human health perspective are arsenic, manganese, benzene, chloroform, and tetrachloroethylene.

6.1.3 Surface Water and Sediments

For the identification of COC in surface water, the RBSL exposure frequency and water ingestion rate assumptions were modified to account for a recreational receptor. The exposure frequency was assumed to be 78 days per year (1.5 times per week) and the water ingestion rate was assumed to be 0.2 liters per day. The net change in the RBSL compared to a residential drinking water ingestion RBSL was 45 times higher for carcinogens and 4.5 times higher for noncarcinogens. The RBSL basis was 1×10^{-6} for excess lifetime cancer risk and 0.1 for noncancer hazard. Based on a comparison of the maximum concentration of a given chemical measured in the surface water to the RBSL for that chemical, arsenic, beryllium, and the carcinogenic PAHs were identified as COC.

For the identification of COC in sediments, a recreational RBSL was also developed. This exposure scenario was based on an exposure frequency of 78 days per year and a sediment ingestion rate of 200 mg per day of exposure. The RBSL basis was the same as that for soil ingestion, i.e., 1×10^{-7} for excess lifetime cancer risk and 0.1 for noncancer hazard. Based on a comparison of the maximum concentration of a given chemical measured in sediment to the sediment RBSL for that chemical, arsenic, beryllium, and the carcinogenic PAHs were identified as COC.

6.1.4 Air

An air dispersion screening analysis was conducted to identify COC that might be present in airborne dust generated from the STF site. The dispersion modeling indicated that arsenic was the only COC that might exceed the RBSL for the inhalation pathway. Because the exceedance was less than one order of magnitude, EPA determined that the inhalation pathway was not of concern at the STF site and need not be considered further in the risk assessment.

6.2 EXPOSURE ASSESSMENT

The objective of the exposure assessment is to estimate the type and magnitude of exposures to the chemicals of potential concern that are present at or migrating from a site.

The degree of risk associated with the contamination at the STF site for a given individual is dependent upon the degree to which that individual is exposed, which is influenced primarily by the types and duration of activities conducted on the property. At the present time, portions of the site are used for industrial purposes. Nonetheless, trespassers (adults and children) have been observed visiting the property to fly model airplanes and to engage in other recreational activities. In the future, the site might continue to be used for industrial purposes or be developed for recreational or residential purposes. The evaluations presented in the risk assessment, therefore, were conducted considering three primary site uses: industrial, residential, and recreational.

Exposure scenarios for workers on-site, residents, and recreationalists were developed for exposure to contaminants by several routes. For workers at the site, the routes evaluated were exposures to chemicals resulting from ingestion of soil, skin contact with soil, and ingestion of ground water used as drinking water. For on-site residents the routes evaluated were ingestion of soil, skin contact with soil, ingestion of ground water used for drinking water, and inhalation of components volatilized from ground water during showering. For recreationalists at the site, the routes evaluated were exposure to contaminants resulting from ingestion of soil, skin contact with soil, and ingestion of surface water and sediments during play. The portion of the site containing surface water and sediments is considered wetlands, and as such, residential or industrial use of that area is thought to be unlikely.

6.2.1 Quantifying Exposures

Estimates of chemical intake by the potential receptors identified for the STF site involved the development of simplifying assumptions. EPA's standard default exposure assumptions were used in the STF exposure assessment for quantifying exposure by soil ingestion, dermal contact, and drinking water ingestion (HHRAR Section 3.0). For surface water and sediment exposures, site-specific information and best professional judgment were incorporated to develop a realistic evaluation of exposure for the STF site (HHRAR Section 3.2.3). The exposure assumptions used in the STF risk assessment to evaluate exposures of potential future residents, workers, and recreationalists are presented in detail in the HHRAR. These assumptions were incorporated, along with chemical concentration data, into equations used to estimate the chronic daily intake (CDI) of the COC. The exposure point concentrations used to estimate the CDI for soil ingestion and dermal contact with soil were the maximum concentration of a given chemical detected in a given grid sample; a CDI was, therefore, calculated for each soil sample collected (HHRAR Appendix F). For ground water ingestion and inhalation, the maximum concentration detected in a given well at any time was used to calculate the CDI; a CDI was, therefore, calculated for each well (HHRAR Appendix F).

6.3 TOXICITY ASSESSMENT

The purpose of the toxicity assessment of a human health risk assessment is to weigh available evidence regarding the potential for particular contaminants to cause adverse effects in exposed individuals and to provide, where possible, an estimate of the relationship between the extent of exposure to a contaminant and the increased likelihood and/or severity of adverse effects.

EPA has performed the toxicity assessment step for many chemicals and publishes the resulting toxicity values on the Integrated Risk Information System (IRIS) or in the Health Effects Assessment Summary Tables (HEAST) which have undergone extensive peer review. These toxicity values are slope factors (SFs) for the evaluation of carcinogenicity, and reference doses (RfDs), for the evaluation of noncancerous effects. SFs and RfDs are described in more detail below. IRIS and HEAST are the sources of the SFs and RfDs used in risk assessment.

SFs have been developed for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic contaminant(s) of concern. SFs, which are expressed in units of $(\text{mg}/\text{kg}\cdot\text{day})^{-1}$, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at a given intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. SFs are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans).

RfDs have been developed by EPA for indicating the potential for adverse health effects from exposure to contaminant(s) of concern exhibiting noncarcinogenic effects. RfDs, which are expressed in units of $\text{mg}/\text{kg}\cdot\text{day}$, are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of contaminant(s) of concern from environmental media (e.g., the amount of a contaminant(s) of concern ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans).

6.4 RISK CHARACTERIZATION

The risk characterization involves the integration of the exposure assessment and the toxicity assessment into quantitative and qualitative expressions of risk. To characterize potential noncancerous effects, comparisons are made between projected intakes of substances and toxicity values; to characterize potential carcinogenic effects, probabilities that an individual will develop cancer over a lifetime of exposure are estimated from the CDI and the toxicity values presented in the toxicity assessment section.

For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. These risks are probabilities that are generally expressed in scientific notation (e.g., 1×10^{-6}). An excess lifetime cancer risk of 1×10^{-6} indicates that, as a reasonable maximum estimate, an individual has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., lifetime) with a reference dose derived for a similar exposure period. The ratio of exposure to toxicity is called a hazard quotient (HQ). By adding the HQs for all contaminant(s) of concern that affects the same target organ (e.g., liver) within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated.

This risk characterization section summarizes the major findings of the detailed risk evaluation presented in the HHRAR (Section 5.0). For soil, the results are presented by area as follows: Dismantling Yard, Rallyard, Amsted, Airport, Swamp, and TIP. For ground water, the results are presented for each of the ground water monitoring wells on the site, taking into account the concentrations currently found in the wells, as well as the concentrations that could occur if the soil contaminants were to leach to ground water. Sediment and surface water ingestion in the wetlands were considered under the recreational scenario only. (Residential or industrial development of the wetlands was not considered likely.) For all media, results are discussed for workers, residents, and recreationalists.

Because of the large volume of data and the division of the site into six areas of evaluation, a modified approach to the risk characterization was used in the HHRAR. For the risk characterization of soil, excess lifetime cancer risk estimates and noncancer hazard quotients were calculated for each sample collected. Each sample represents a grid location. This approach generated a distribution of cancer risks and hazard quotients for a given area. For example, in the Dismantling Yard the cancer risk distribution under a residential scenario was as follows:

- 0.4% of the samples collected had concentrations of carcinogenic chemicals that yielded excess lifetime cancer risks of $\geq 1 \times 10^{-3}$;
- 49% of the samples were in the range of 1×10^{-4} to $< 1 \times 10^{-3}$;
- 50% of the samples were in the range of 1×10^{-5} to $< 1 \times 10^{-4}$; and
- And the remaining 0.4% of the samples yielded cancer risks from 1×10^{-6} to $< 1 \times 10^{-5}$.

Since the high end of the NCP acceptable risk range for cancer risk is 1×10^{-4} , the residential scenario distribution for the Dismantling Yard indicates that nearly 50% of this area exceeds this benchmark. Similar distributions for noncancer HQs were also developed.

For the evaluation of the ground water ingestion and inhalation pathways, excess lifetime cancer risks and noncancer HQs were calculated for each monitoring well to create distributions similar to those developed for soil exposure pathways.

Toxicity values, SFs or RfDs, are not available on IRIS or HEAST for lead; therefore, the excess lifetime cancer risk and the noncancer hazard due to the presence of lead at STF cannot be quantified. EPA has published lead cleanup standards for use at residential and industrial sites (OSWER Directive 9355.4-02). The residential cleanup level is 500 mg lead/kg soil; and for industrial sites, 1000 mg lead/kg soil. These cleanup levels were used for the evaluation of soil lead concentrations at STF.

The excess lifetime cancer risks and noncancer HQs developed for worker exposures at the six areas covered in the HHRAR are presented by area in the following sections. The risk characterization for the residential and recreational exposure scenarios are discussed briefly. As would be expected, cancer risk

and noncancer hazard under the industrial scenario is generally slightly less than that for the residential scenario, and slightly greater than that for the recreational scenario.

In the following discussion, excess lifetime cancer risk and noncancer hazard associated with surface soil ingestion are discussed first because this pathway yields the greatest risk or hazard. The ingestion of subsurface soil or dermal contact with soil exposure pathways are discussed where cancer risk exceeds 1×10^{-4} or a noncancer HQ of one. A discussion of cancer risk and noncancer hazard associated with ground water ingestion or inhalation follows the soil discussion. The cancer risks associated with ingestion of surface water were less than 1×10^{-6} and the noncancer hazard is less than one; therefore, the risks associated with this pathway will not be discussed further. Ingestion of sediments did not yield a recreational scenario cancer risk greater than 1×10^{-4} nor a HQ greater than one; therefore, the potential health effects associated with this pathway will not be discussed further.

An excess lifetime cancer risk range of 10^{-4} to 10^{-6} (1 in 10,000 to 1 in 1,000,000) is the NCP acceptable risk range. Noncancer health effects are expressed as a Hazard Index (HI). His less than one generally are believed not to be associated with adverse health effects.

6.4.1 Dismantling Yard

For surface soil ingestion under the industrial scenario, more than 99% of the soil samples collected in the Dismantling Yard yielded excess lifetime cancer risks less than 1×10^{-4} . The presence of arsenic was the primary contributor to cancer risk (Figure 6-1). PCBs, carcinogenic PAHs, and beryllium also contribute to the cancer risk. Similarly, more than 99% of the soil samples yielded noncancer HQs less than 1; and the hazard was largely a result of the presence of arsenic (Figure 6-1). Cancer risk and noncancer hazard estimates for dermal contact with soil and for ingestion of subsurface soil were less than for surface soil.

Lead concentrations exceed the 1,000 mg/kg industrial soil cleanup level in 42% of the soil samples collected which roughly represents 42% of the Dismantling Yard area. Lead concentrations exceed 500 mg/kg in 63% of the soil samples.

For surface soil ingestion under the residential scenario, 49% of the soil samples collected in the Dismantling Yard yielded an excess lifetime cancer risk of 1×10^{-4} . Approximately 50% of the soil samples yielded cancer risks in the range of 1×10^{-5} . The presence of arsenic was the primary contributor to cancer risk. PCBs, carcinogenic PAHs, and beryllium also contribute to the cancer risk. Under an adult residential exposure scenario, noncancer hazard quotients exceeded 1 in 13% of the soil samples and under a child residential scenario; noncancer hazard quotients exceeded 1 in 83% of the soil samples. The noncancer hazard for both adult and child scenarios was largely a result of the presence of arsenic.

Lead concentrations exceed the 500 mg/kg residential soil cleanup level in 63% of the soil samples collected which roughly represents 63% of the Dismantling Yard area.

6.4.2 Railyard

More than 99% of the surface soil sampling grid locations in the Railyard yielded excess lifetime cancer risks less than 1×10^{-4} (Figure 6-2). The cancer risks were largely due to arsenic with minor contributions from PCBs and PAHs. Noncancer HQs were less than one for all but two sampling locations (of approximately 165 locations). The presence of arsenic was the basis for most of the noncancer hazard.

Lead concentrations exceed 1,000 mg/kg at 46 sampling locations (approximately 28% of the Railyard area) and exceed 500 mg/kg at 75 sampling locations (approximately 46%).

Approximately 32% of the surface soil sampling grid locations in the Railyard yielded excess lifetime cancer risks of 1×10^{-4} or less (HHRAR Section 5.2.2). The remaining 68% of the sampling locations were at or less than 1×10^{-5} . The cancer risks were largely due to arsenic with minor contributions from PCBs and PAHs.

Figure 6-1.
Distribution of Excess Lifetime
Cancer Risk and Non Cancer
Hazard at the Dismantling Yard
(Industrial Exposure)

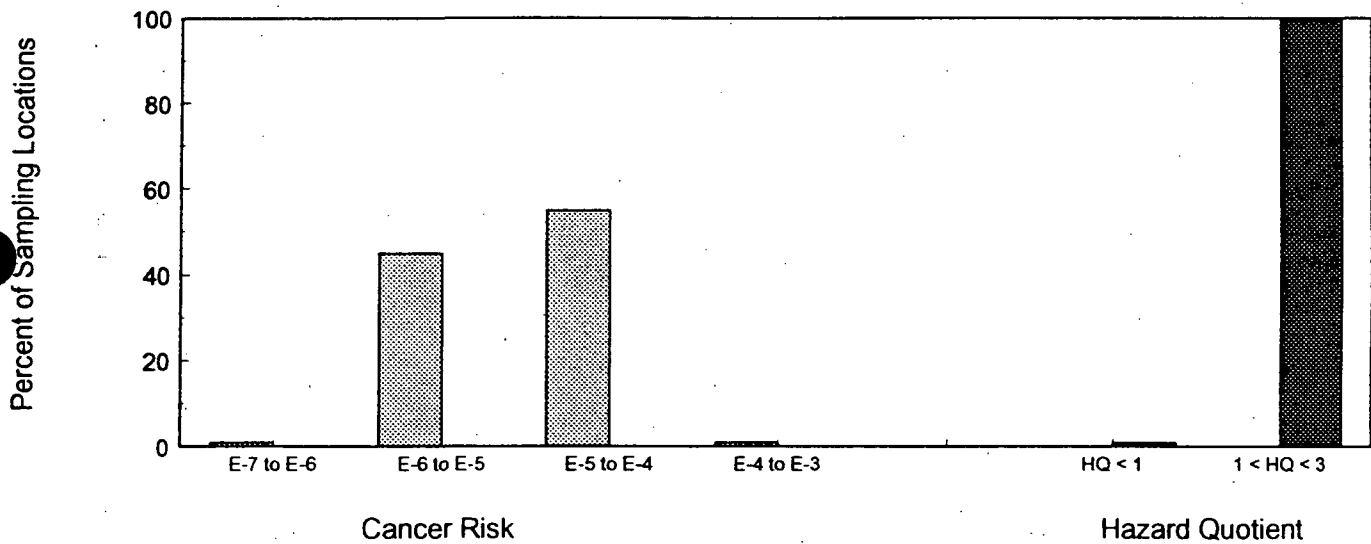
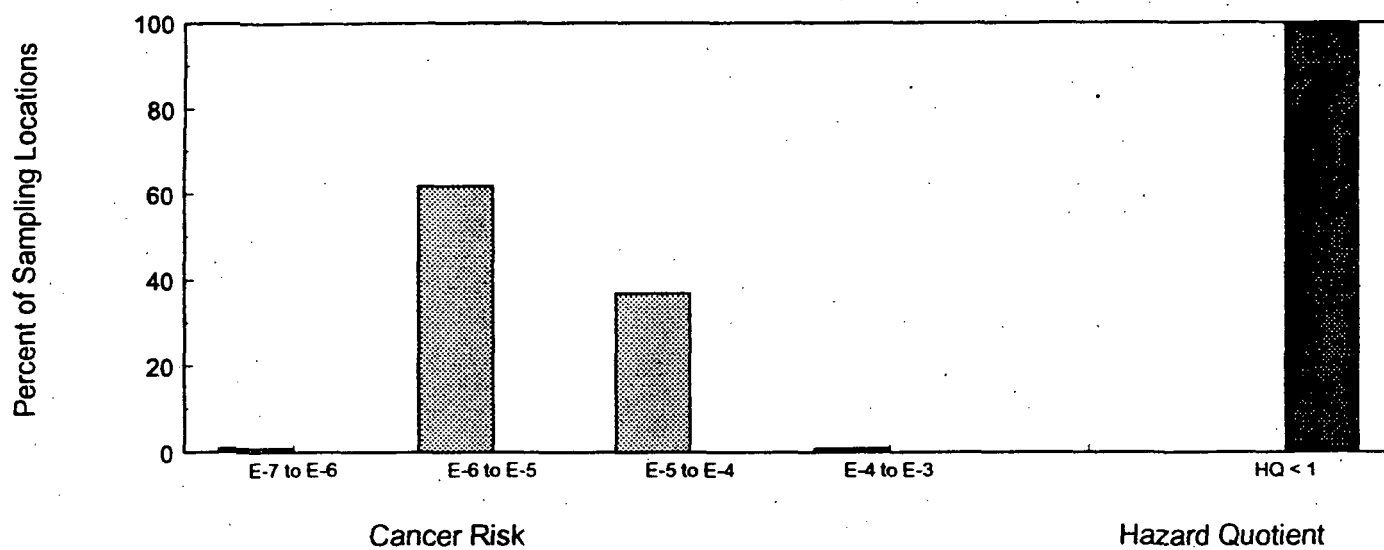


Figure 6-2.
Distribution of Excess Lifetime
Cancer Risk and Noncancer Hazard
at the Railyard (Industrial Exposure)



Noncancer hazard quotients under the adult residential scenario were 1 or more at 11% of the sampling locations. The presence of arsenic was the basis for most of the noncancer hazard.

6.4.3 Amsted Property

Excess lifetime cancer risk for the surface soil ingestion pathway did not exceed 1×10^{-4} nor a HQ of one at any sampling location on the Amsted property (Figure 6-3).

Lead concentrations exceeded 1000 mg/kg at 20 sampling locations, representing approximately 47 % of the Amsted property.

Under the residential exposure scenario, excess lifetime cancer risk for the surface soil ingestion pathway was equal to or less than 1×10^{-4} at 30% of the sampling grid locations (which represents approximately 30% of the site), $\leq 1 \times 10^{-5}$ at 66% of the site, and $\leq 1 \times 10^{-6}$ at 5% of the site (HHRAR Section 5.2.3). Under an adult residential scenario, the noncancer hazard index exceeded one at 34% of the sites, and for the child scenario, 70%. The noncancer hazard is largely due to arsenic and copper with some contribution by antimony and zinc.

6.4.4 Airport

Arsenic and, to a lesser extent, PAHs account for the excess lifetime cancer risk associated with the surface soil samples collected from the Airport area. No sampling locations exceeded a cancer risk of 1×10^{-4} , only one sampling location yielded a cancer risk between 1×10^{-5} and 1×10^{-4} (Figure 6-4). The remainder of the site was less than 1×10^{-5} . No sampling location yielded a noncancer HQ greater than one.

Lead concentrations exceeded 1,000 mg/kg at two sampling locations which represents only 4% of the Airport area.

Arsenic and, to a lesser extent, PAHs account for the excess lifetime cancer risk associated with the residential exposure scenario at the Airport area. All sampling locations yielded excess lifetime cancer risks in the range of 1×10^{-4} or less. No sampling location yielded a noncancer hazard quotient greater than one under the adult residential exposure scenario and only two locations exceeded one under the child scenario.

Lead concentrations exceeded 500 mg/kg at five sampling locations representing 12% of the Airport area.

6.4.5 Swamp

Arsenic and, to a lesser extent, PAHs account for the excess lifetime cancer risk associated with the surface soil samples collected from the Swamp area. No soil sample yielded a cancer risk greater than 1×10^{-4} , and 83% of the samples yielded cancer risks between 1×10^{-6} and 1×10^{-5} (Figure 6-5). No sampling location yielded a noncancer HQ greater than one.

No lead concentrations at the Swamp exceeded 1,000 mg/kg.

Under the residential scenario, 5% of the soil sampling locations yielded excess lifetime cancer risks $\leq 1 \times 10^{-4}$, 79% were $\leq 1 \times 10^{-5}$, and 83% were $\leq 1 \times 10^{-6}$. No sampling location yielded a noncancer hazard quotient greater than one under the adult residential exposure scenario, and only two locations (3%) exceeded a hazard quotient of one under the child scenario.

No lead concentrations at the Swamp exceeded 500 mg/kg.

6.4.6 TIP

The presence of PAHs accounts for all of the excess lifetime cancer risk at the TIP area. The excess lifetime cancer risk did not exceed 1×10^{-4} at any sampling location and 67% of sampling locations yielded cancer

Figure 6-3.
Distribution of Excess Lifetime
Cancer Risk and Noncancer Hazard
at the Amsted (Industrial Exposure)

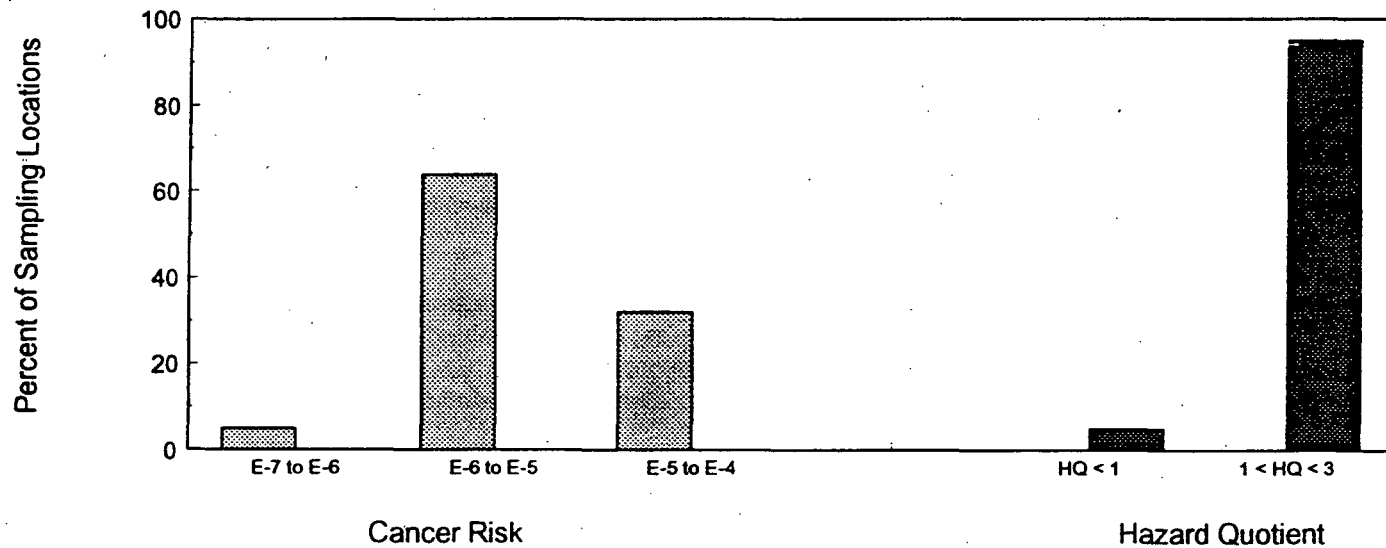


Figure 6-4.
Distribution of Excess Lifetime
Cancer Risk and Noncancer Hazard
at the Airport (Industrial Exposure)

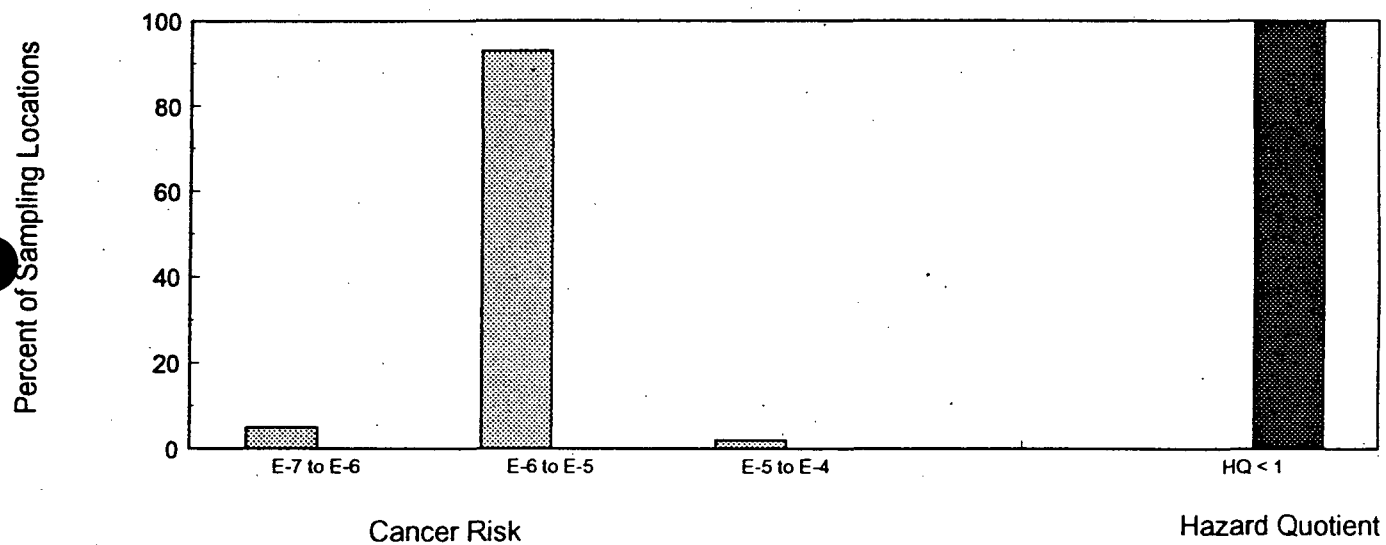


Figure 6-5.
Distribution of Excess Lifetime
Cancer Risk and Noncancer Hazard
at the Swamp (Industrial Exposure)

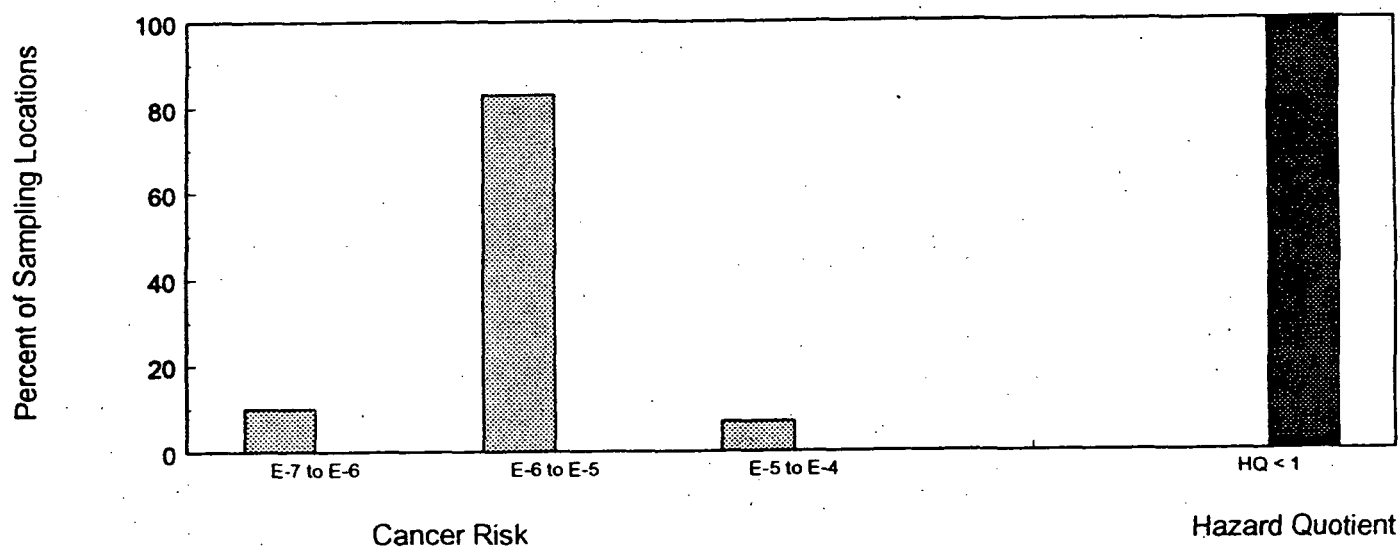
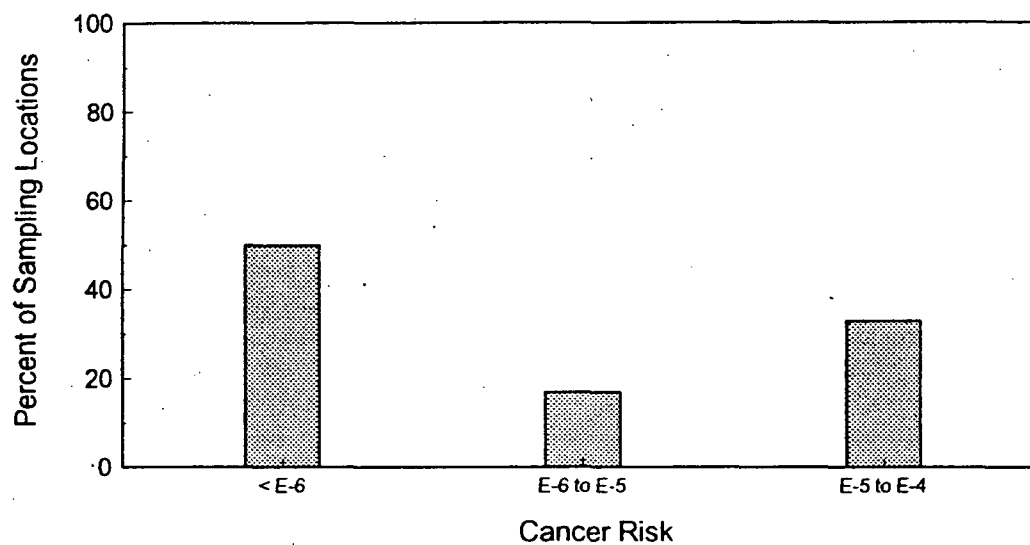


Figure 6-6.
Distribution of Excess Lifetime
Cancer Risk and Noncancer Hazard
at the TIP (Industrial Exposure)



risks less than 1×10^{-5} (Figure 6-6). Because only PAHs contribute to the health risks associated with the TIP area, no noncancer HQ calculations were conducted.

No lead concentrations at the TIP exceeded 1,000 mg/kg.

Under the residential exposure scenario, the excess lifetime cancer risk was $\leq 1 \times 10^{-4}$ at 33% of the soil sampling locations, $\leq 1 \times 10^{-5}$ at 17%, $\leq 1 \times 10^{-6}$ at 33%, and $\leq 1 \times 10^{-7}$ at 17% of the sampling locations. Because only PAHs contribute to the health risks associated with the TIP area, no noncancer hazard quotient calculations were conducted for the residential scenario.

No lead concentrations at the TIP exceeded the residential standard of 500 mg/kg.

6.4.7 Ground Water Exposure Pathways

Twenty-two monitoring wells were evaluated for the assessment of ground water contamination. Under an industrial exposure scenario, workers would be exposed to chemicals in ground water if they were to drink the water. Of these wells, only four represent an excess lifetime cancer risk to workers of 1×10^{-4} . Ingestion of arsenic, and to a lesser extent, beryllium account for the cancer risk associated with ingestion of ground water. The noncancer HQ at five wells exceeded one. Arsenic, manganese, naphthalene, and nickel account for most of the noncancer hazard.

Under a residential scenario, the contaminants measured in one well yield an excess lifetime cancer risk of 1×10^{-3} . The remaining wells yield a residential scenario cancer risk of 1×10^{-4} or less.

6.5 UNCERTAINTY ANALYSIS

Some degree of uncertainty is associated with each of the risk estimates calculated in the HHRAR. Uncertainties arise at each of the steps of the risk assessment including the environmental sampling, selection of COC, exposure assessment, toxicity assessment, and risk characterization. Uncertainties associated with the environmental sampling and the selection of COC depend on the degree to which samples taken represent the chemical concentrations actually on the site and the degree to which the chemicals posing the greatest risks to human health have been properly identified. In this assessment, the environmental sampling was conducted to identify relatively small hot spots of contamination; and the COC were selected using screening levels that were in most cases ten-fold lower than the concentrations required for the protection of public health under residential exposure conditions. Therefore, the environmental sampling and selection of COC are expected to overestimate the number of actual COC.

Uncertainties related to the receptor populations chosen for evaluation and their assumed extent of exposure are also found in a risk assessment. In this assessment, three different populations with different levels of exposure were considered; and for each population conservative assumptions (often the 95 percentile exposure level values) regarding the extent of exposure were made. Use of these reasonable maximum exposure assumptions is likely to overestimate the risks by an order of magnitude or less for most exposure scenarios, although skin contact risks estimated with reasonable maximum exposure assumptions could be two to three orders of magnitude higher than skin contact risks using average assumptions. Use of maximum chemical concentrations as exposure point concentrations for ground water, surface water, and sediments could also overestimate the risks.

There are also uncertainties associated with the toxicity parameters used in the risk characterization. When data are lacking, the toxicity criteria generally incorporate conservative assumptions and are, therefore, likely to overestimate risk. In some cases in this assessment, toxicity criteria were unavailable for some COC, such as lead. Therefore, a quantitative estimation of risk was not conducted for certain chemicals; and the risks presented in this assessment could be underestimated as a result.

In general, because conservative assumptions are made at many different steps and are compounded in the risk estimate, the values calculated in this report are likely to overestimate rather than underestimate the true risk associated with the site.

The risks discussed above do not include exposure to lead. EPA is currently revising its toxicity guidelines for lead. High concentrations of lead well above Washington Model Toxics Control Act (MTCA) cleanup levels and EPA guidance levels occur in surface and subsurface soil at the site. Lead can cause nervous system damage and other health effects. Reducing exposure to these high lead concentrations is a major element of the proposed cleanup action.

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment. Therefore, EPA has determined that cleanup actions are necessary.

6.6 STREAMLINED RISK ASSESSMENT FOR THE AMSTED PROPERTY

EPA prepared a streamlined risk assessment for the petroleum contamination at the Amsted property. The risk assessment assessed the potential exposure to drinking ground water contaminated with petroleum related chemicals. Potential COCs included benzene, ethylbenzene, xylenes, acenaphthene, carbazole, and chrysene. Risks associated with drinking this ground water are less than 1 in 1,000,000 for both potential future residents and on-site workers. Federal drinking water standards are not exceeded; contamination is below MTCA cleanup levels; and risks are less than 1 in 1,000,000. EPA has determined, therefore, that the contamination does not pose an unacceptable risk; and that cleanup action under CERCLA is not necessary for these chemicals on the Amsted Property.

6.7 ECOLOGICAL RISK ASSESSMENT

EPA prepared the Ecological Risk Assessment (EPA 1993) of the site to evaluate the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors (e.g., chemicals, physical stressors such as filling). A conceptual model describing the ecosystem at risk was formulated. The likelihood of contact between stressors and the ecosystem at risk, as well as the effects of these stressors was then discussed. A risk characterization was presented, integrating the exposure and effects analysis and discussing uncertainties and ecological significance.

The Ecological Risk Assessment focused on the wetland and drainage channel along the western portion of the site as the ecosystem of most significance. The former Swamp/Lakebed area was also given a high priority for consideration. This area was formerly a lake and wetland area that has been filled in with foundry waste and other fill material and is now a grassland and wetland area. The other grassland areas were not given as high a priority, as it was considered presently comparable to a vacant lot that could be developed in the future.

The results of the Ecological Risk Assessment indicated that the potential chemical impacts from on site contaminants on the plant species of the grassland area are small. It is unlikely that cleanup of the elevated levels of metals in the grasslands would improve the quality of plant or animal life in this area. EPA has also determined that the levels of contaminants in the water and sediment in the wetland/drainage channel area are not unusual for urban wetlands with similar water quality problems. The wetland area is serving a beneficial use as a filter for urban storm water runoff coming from off the site. The low-quality wetland area could become more productive and provide a more diverse habitat for a variety of organisms if the quality of storm water entering the site were improved.

6.8 CLEANUP GOALS

The cleanup goals identified by EPA and listed below are based upon the results of the RI/FS, the risk assessment, and a number of other risk management considerations, including the scope, impact on workers and the community of remedial actions, as well as state and community acceptance of the remedy,

and costs. EPA's overall cleanup goal is to protect human health and the environment. As part of this goal, EPA must meet requirements of certain state and federal laws and regulations.

6.8.1 STF Soil

The primary soil cleanup standards for this site are the numerical standards contained in the State of Washington Model Toxics Control Act (MTCA) and its implementing regulations. The Feasibility Study identified cleanup goals for this site based on a residential exposure scenario, even though this site historically has been used for industrial purposes. This approach was necessary in order to meet MTCA requirements that were in effect at the time the Feasibility Study was being written. In June 1994, amendments to MTCA became effective which allowed broader use of industrial cleanup levels at industrial sites, if the entire site is zoned for industrial purposes. At that time, EPA made the determination, based on the information presented in the RI/FS, that the STF site was zoned entirely for industrial uses and was eligible for the use of industrial cleanup standards pursuant to MTCA. The Proposed Plan, dated June 15, 1994, proposed that the site cleanup levels be based on protection of industrial workers. These cleanup levels would be used for determining areas of the site that must be capped. Those areas of contaminated soil with chemical concentrations between MTCA residential and industrial cleanup levels would be restricted to industrial use only.

Subsequent to the comment period on the Proposed Plan, new information came to the attention of EPA indicating that a narrow, 100-foot strip of the site (about 18 acres), along the western boundary, is zoned R-3-T, Residential-Commercial Transitional District. Based on this new information, EPA has determined that MTCA residential cleanup levels apply to this site since portions of this site are zoned for residential/commercial uses. These cleanup levels are presented in Table 9-3 of this ROD. These levels are to be attained down to a depth of 15 feet, which is protective for direct contact with soil. Those areas of the site with contaminated soil between the residential and industrial cleanup levels are restricted to industrial uses only. Other institutional controls, as discussed in Section 9.1.3, will also be used to prevent exposure to chemicals above residential cleanup levels. Additional cleanup to residential cleanup levels will be required if the property uses change to residential in the future.

Only a limited number of contaminants are present in the soil above levels which pose a threat to on-site workers. The carcinogens of concern include PAHs, PCBs, and arsenic. Lead is also a contaminant of concern and poses a threat to workers. MTCA industrial A cleanup levels will be used for protection of industrial workers. These industrial cleanup levels are listed in Table 9-2 and will be used to determine locations at which consolidation and containment (capping) must occur. Soil with contamination above these levels must be capped. Both the MTCA residential and industrial cleanup levels are protective within the requirements of the NCP.

6.8.2 Pioneer Builders Supply Subsurface Soil and Ground Water

At Pioneer Builders Supply, the objective of the subsurface soil cleanup goals is to prevent further ground water contamination. The ground water contamination is the result of leaking underground gasoline storage tanks. The tanks have been removed, but contaminated soil and ground water remain. The cleanup levels for the subsurface soil at Pioneer Builders Supply are shown in Table 9-4. These levels are to be attained throughout the affected subsurface soil.

Total Petroleum Hydrocarbons (TPH) have been identified by the Washington State Department of Ecology (Ecology) as a potential contaminant of concern at Pioneer Builders Supply. The remedial investigation analyzed for the individual constituents of TPH (e.g., benzene, toluene, etc.) but did not quantify the overall TPH. The risk assessment for the site identified chemicals of concern based on the individual components of TPH as well, since risk-based concentrations are available for some of the TPH constituents, but not for total TPH. While TPH is listed as a chemical of concern in Table 9-3, compliance with cleanup goals at the site will be based on the cleanup of the individual components of TPH. Any action regarding exceedances of the MTCA TPH standard will be taken by Ecology at its discretion.

EPA and Ecology have determined that the federal drinking water standards called MCLs are relevant and appropriate to the cleanup of the ground water at South Tacoma Field. Where MCLs (and non-zero MCLGs, as appropriate) are not available, MTCA ground water cleanup levels, based on protection of drinking water, are used.

Ground water cleanup goals have been established for the Pioneer Builders Supply site where consistent exceedances of MCLS have occurred. The objective of the ground water cleanup goals is to reduce total cancer risk from all carcinogens to no greater than 1 in 100,000 (10^{-5}) and a HI that will not exceed 1. The cleanup levels for ground water are shown in Table 9-3. The cleanup levels shall be met throughout the affected aquifer. If cleanup to federal drinking water standards is achieved, and the groundwater still does not achieve the MTCA cumulative risk requirement of risks no greater than 1 in 100,000 and Hazard Index no greater than 1, then groundwater use will be restricted to non-drinking water purposes.

As discussed above, TPH is listed in cleanup goals for ground water since it is a contaminant of concern for Ecology. Compliance with ground water cleanup goals under CERCLA, however, will be based on cleanup of the individual constituents of TPH.

There is no consistent pattern of ground water contamination above drinking water standards at the remainder of the site. EPA will evaluate the need for any additional ground water treatment (at areas other than Pioneer Builders Supply) as part of the selected remedy.

6.8.3 Tacoma City Light Dry Wells

Although cleanup to MTCA Method A or B residential levels is not required at the South Tacoma Field site, the PRPs have proposed to implement these more stringent requirements by excavating and transporting off-site for disposal all soil with concentrations of PCBs and other contaminants above these cleanup levels. Soil with PCB concentrations above 50 mg/kg and endrin above 0.13 mg/kg will be excavated and transported off-site for incineration.

7.0 DESCRIPTION OF ALTERNATIVES

The results of the sampling investigations were used to combine the original seven sampling areas discussed above into three remediation (cleanup) areas based on the similarity of contaminants. The STF Feasibility Study (FS) report discussed a range of cleanup alternatives, including the "no further action" alternative, for the following three areas:

- South Tacoma Field (STF) soil
- Pioneer Builders Supply (subsurface soil and ground water)
- Tacoma City Light Dry Wells (soil)

The FS report described the alternatives for each of the areas based on effectiveness, implementability, cost, and other factors. Several alternatives were eliminated from further consideration in the FS report because of technical deficiencies and are not described here.

7.1 STF SOIL

This area includes the following sampling areas:

- Amsted Property
- Burlington Northern Dismantling Yard
- Burlington Northern Railyard

- (includes surface soil in Pioneer Builders Supply area)
- Tacoma Industrial Properties
- Former Swamp/Lakebed Area
- Former Airport Area

Five soil cleanup alternatives made it through to final evaluation for soil contamination at the STF site and are described below. These alternatives addressed the soil contamination found principally at Amsted, the Dismantling Yard and the Railyard, where the highest concentrations of soil contamination were found. With the exception of arsenic, the other COCs in soil (e.g., PAHs and PCBs) are, for the most part, mixed with lead contaminated soil. Thus, cleanup of the lead contaminated soil will address most of the other contaminants (with the exception of arsenic) in the soil.

The FS estimated that the cost of treating or removing all lead contaminated soil above the 250 parts per million (mg/kg) residential cleanup level would be about \$1.4 billion (4,796,000 cubic yards of soil including a 10% contingency and commingling with other chemicals of concern). The cost of treating or removing all lead-contaminated soil above the 1,000 parts per million (ppm) industrial cleanup level would be about \$190 million (about 654,000 cubic yards of soil using the same assumptions). Because of this extreme cost in relation to the assessed risks, the FS evaluated the cost of treating only the most highly contaminated soil, called hot spots. A range of arsenic and lead concentrations in soil was considered in the FS to provide a basis for balancing the potential benefits of a remedy with the cost of that remedy. (The concentration ranges for these hot spots are called "aggressive action levels" in the FS.) The purpose of the evaluation was to determine at what point the volume (and cost) of soil being treated increases significantly, but the concentration of the contaminant being treated is not significantly lower.

The FS evaluated a range of possible cleanup levels for the lead hot spots that range from 4,500 to 30,000 ppm. In addition, the FS evaluated the cost of cleanup of two hot spot arsenic concentrations, 200 and 570 ppm. Soil volumes associated with these concentrations range from 138,000 cubic yards to 7,800 cubic yards, respectively.

Cleanup of surface water or sediments in the wetlands area was not addressed in these on-site alternatives because the major contributor of chemical contamination comes from off-site storm water discharge through two City of Tacoma outfalls. The Proposed Plan described activities in the wetlands and drainage channel areas as "no action" other than monitoring. However, remedial activities at the STF site will include institutional controls (such as deed restrictions) and access restrictions (such as fences or other barriers) for those areas. Therefore, these actions should be more accurately expressed as components of the selected remedy rather than as "no action." Institutional controls and access restrictions for the site were clearly set out in the FS and in the Proposed Plan and were discussed at the public meeting. EPA has corrected the language in the ROD to more accurately designate the activities of implementing institutional controls and access restrictions as remedial activities for the wetland and surface water drainage channel in the western section of the site. This corrected designation has little or no impact on the overall scope, performance, or cost of the preferred alternative presented in the Proposed Plan. EPA's cleanup approach to the contamination in the surface water and sediments in the western portion of the site is further described in the Selected Remedy (Section 9.0).

7.1.1 Common Elements to STF Soil Alternatives

All the alternatives considered for the STF soil include ground water monitoring program (cost of monitoring factored for a period of 30 years). The ground water monitoring program would be reviewed every five years to determine whether additional remedial actions are required or whether the monitoring program could be modified or discontinued.

Alternatives STF-2 through STF-6 include institutional controls for all the areas where contaminated soil would be left in place. Institutional controls could include: deed restrictions, special requirements for excavation on the property, educational programs, and signs and fences.

7.1.2 Alternative STF-1: No Further Action

EPA is required by law to evaluate the "No Action" alternative, which provides a baseline for comparison against other alternatives. Under this alternative, there are no physical remediation activities; and the site would be left in its present condition. No decline in metals contamination is expected with this alternative. No institutional controls would be implemented under this alternative, and no remedial actions would be taken to treat areas of contamination. Because no remedial activities would be implemented, there would be no reduction in the current potential risks from exposure to contaminated soil; i.e., risks would be essentially the same as those identified in the baseline risk assessment. This alternative includes ground water monitoring.

Estimated Capital Costs: None

Estimated Operation and Maintenance Costs (O&M): \$371,000

Estimated Total Costs: \$371,000

Estimated Time to Implement: 10 months

7.1.3 Alternative STF-2: Institutional Controls

Alternative STF-2 consists of institutional, engineering and safety controls to protect site workers from exposure to contaminated soil. The contaminated soil would not be treated or contained and potential exposure routes would remain. This alternative would provide some degree of protection for workers through the use of various controls. Workers potentially exposed to uncovered contaminated soil in activities that involve significant soil contact would be instructed to wear personal protective equipment. Facility operators would be instructed to conduct air monitoring to determine if dust control measures were necessary to protect workers during daily work activities. When necessary, dust suppression could be implemented by spraying the site with water or covering the areas with tarps. If dust suppression is not effective or practical, the workers would be instructed to wear respirators.

Training and informational meetings would be held with employees and property owners to inform them of site hazards. Safety meetings would be held with employees instructing them on precautions to be taken to avoid ingestion when working on the site.

Controls would also be necessary for construction work on the site. If contaminated, soil piles would need to be provided with run-on and runoff controls such as tarps, curbing and liquid absorbing booms. Contaminated soil from construction excavations would be taken to a permitted off-site facility for treatment, storage, or disposal in accordance with applicable regulations. Signs would be located around the site to warn about underground contamination and potential hazards incurred by excavation in those areas. Notices would be posted within buildings to inform employees of hazards.

Institutional controls, including deed restrictions, would also be imposed. Deed restrictions would prohibit land uses other than industrial, would warn future property owners of the contamination on their property and would specify that contaminated soil excavated in the future must be properly handled and disposed of in accordance with state and federal regulations.

Estimated Capital Costs: \$10,000

Estimated O&M Costs: \$450,000

Estimated Total Costs: \$460,000

Estimated Time to Implement: 10 months

7.1.4 Alternative STF-3: Containment (Capping)

Alternative STF-3 consists of capping soil which exceeds the cleanup levels identified in Table 9-2. The intent of this action would be to prevent dermal contact and ingestion of the contaminated soil by personnel working on site. This alternative has two options: capping in place or consolidating contaminated soil into

three smaller areas and capping (see Figure 7-1). About 45 acres of contaminated soil would be capped if no consolidation occurred. Approximately 32 acres would be capped under the consolidation and capping option.

Two types of caps (asphalt and soil) are proposed in this alternative which would allow for future industrial development of this portion of the site. The soil cap would consist of a minimum of six inches of gravel topped by a minimum of six inches of top soil and vegetation. The asphalt cap would consist of a minimum of six inches of crushed rock topped by a minimum of three inches of asphalt. The asphalt and soil caps, once in place, will protect against exposure to contaminated soil.

Some areas of the site, particularly the former Swamp/Lakebed area, have contamination above the industrial cleanup levels in the subsurface soil but are covered with a relatively uncontaminated layer of soil. These areas are considered capped and are not included in the acreage mentioned above. Verification sampling would be required to confirm that at least one foot of soil with chemical concentrations below cleanup standards is in place above the contaminated soil. This alternative also includes engineering, safety, and institutional controls as described in Alternative STF-2. The cap would be inspected twice annually and repaired as necessary to ensure cap integrity.

Capping:

Estimated Capital Costs: \$6,566,000

Estimated O&M Costs: \$1,970,000 (for 30 years)

Estimated Total Costs: \$8,536,000

Estimated Time to Implement: 20 Months

Consolidation and Capping:

Estimated Capital Costs: \$8,564,000

Estimated O&M Costs: \$1,564,000

Estimated Total Costs: \$10,138,000

Estimated Time to Implement: 20 Months

7.1.5 Alternative STF-4: Off-site Disposal of Hot Spots with On-site Containment (Capping)

Alternative STF-4 consists of excavating hot spots of soil contamination and then disposing of the soil off-site at a permitted hazardous waste disposal facility. The intent of this action would be to prevent dermal contact and ingestion of the contaminated soil by personnel working on-site. The FS considers a range of lead and arsenic hot spot concentrations that would be excavated. Estimated hot spot soil volumes range from 7,800 cubic yards to 138,000 cubic yards depending on the hot spot concentration thresholds. PCB and PAH contaminated soil would also be excavated and disposed off-site. Excavated soil would be treated as necessary, prior to disposal off-site at a permitted facility. Soil designated as hazardous under the Resource Conservation and Recovery Act (RCRA) or dangerous waste under the Washington State Dangerous Waste Regulations would be solidified and disposed at a permitted hazardous waste landfill. Soil not designated as hazardous or dangerous waste under state regulations would be disposed of at a permitted solid waste facility. This alternative also includes capping, or consolidating and capping, contaminated soil above the soil cleanup levels, but below the hot spot levels. The types of caps would be the same as described in Alternative STF-3. Cap inspection and repair, as described in Alternative STF-3, would also be required. Institutional controls as described in Alternative STF-2 would apply to capped areas.

A range of costs and cleanup duration is listed below which covers the range in hot spot concentrations that were considered for off-site disposal and the cost of consolidating soil. For reference purposes, lower costs reflect off-site disposal of soil with only the highest concentrations of lead and arsenic (and other contaminants of concern) and on-site capping without consolidation for soil with lower levels of contamination.

Estimated Capital Costs: \$9,324,000 - \$58,976,000
Estimated O&M Costs: \$893,000 - \$1,909,000
Estimated Total Costs: \$11.2 - \$59.9 million
Estimated Time to Implement: 12 Months to 5 years

7.1.6 Alternative STF-6: On-site Aboveground Solidification of Hot Spots, Off-Site Incineration, and Containment (Capping)

Alternative STF-6 consists of aboveground, on-site solidification for soil hot spots; off-site incineration of PCB contaminated soil, if required; and on-site capping of lower concentrations of contaminated soil. Solidification refers to adding cement or other binding agents to the soil to bind contaminants. The contaminants are less likely to leach or to pose an ingestion risk after solidification. Solidified soil would be capped on-site after treatment.

Soil solidification would be conducted in a temporary treatment area set up at the site. Contaminated soil would be excavated from hot spot areas and transported to the treatment area for stabilization. Stabilization would entail screening the soil to remove oversize material and debris, adding Portland cement or other binding agents and water. The materials would be mixed, returned to the original excavation and allowed to set. Confirmation sampling of the solidified soil would be required to ensure that treated soil meets treatment criteria (e.g., land disposal requirements).

PCBs above 50 ppm were found in only one location at Pioneer Builders Supply. This alternative includes incineration of soil with PCB concentrations above 50 ppm if additional sampling at this location confirms PCB concentrations above 50 ppm.

Consolidation and capping of soil with contaminant concentrations between the cleanup levels and the hot spot levels is also included under this alternative as described in Alternative STF-4. A range of costs and cleanup times is listed below which covers the range in hot spot concentrations that were considered for treatment and the cost of consolidating soil.

A range of costs and cleanup duration is listed below which covers the range in hot spot concentrations that were considered for treatment and the cost of consolidating soil. For reference purposes, lower costs reflect treating only the highest concentrations of lead and arsenic (and other contaminants of concern) in contaminated soil and on-site capping without consolidation for soil with lower levels of contamination.

Estimated Capital Costs: \$8,953,000 - \$42,041,000
Estimated O&M Costs: \$1,615,000 - \$12,861,000
Estimated Total Costs: \$11 - \$44.5 million
Estimated Time to Implement: 20 months to 5 years

7.2 PIONEER BUILDERS SUPPLY

Four cleanup alternatives for ground water contamination in the vicinity of Pioneer Builders Supply made it through the FS evaluation process and are described below.

7.2.1 Alternative PBS-1: No Further Action

Under the "No Action" alternative, the ground water and soil would be left in its present condition to partially recover with time through natural processes such as chemical and biological breakdown of organic contaminants. No institutional controls would be implemented, and no remedial action would be taken to remove existing sources of contamination or to mitigate the potential for exposure to contamination.

The No Action alternative would include groundwater monitoring (monitoring costs factored for a 30-year period) in wells near Pioneer Builders Supply. A review of the monitoring data would be conducted at 5-year

intervals to evaluate whether remedial actions are required and to evaluate whether the monitoring program could be modified or discontinued.

Estimated Capital Costs: None
Estimated O&M Costs: \$491,000
Estimated Total Costs (present worth): \$491,000
Estimated Time to Implement: 4 months

7.2.2 Alternative PBS-2: In-Place Containment (Capping)

Alternative PBS-2 consists of placing an asphalt cap over the former UST location to limit surface water infiltration and to reduce the potential for exposure to contaminated subsurface soil. The asphalt cap would be approximately 50 feet long by 25 feet wide and would be a minimum of three inches thick. The asphalt cap would adjoin the existing pavement to provide a continuous cover. Migration of the contaminated ground water plume would not be addressed by this alternative. As with Alternative PBS-1, soil and ground water in this area would partially recover with time through natural biological and chemical processes. This alternative would include institutional controls (e.g., deed restrictions, requirements for handling and disposal of excavated soil, prohibiting drilling of drinking water wells in the vicinity of the contaminated ground water plume and educational programs) for this portion of the site and ground water monitoring.

Estimated Capital Costs: \$8,000
Estimated O&M Costs: \$606,000
Estimated Total Costs: \$614,000
Estimated Time to Complete: 6 months

7.2.3 Alternative PBS-4: Aboveground Vapor Extraction and Ground Water Extraction and Treatment

Alternative PBS-4 consists of excavating approximately 2,600 cubic yards of contaminated soil and treating it on-site using vapor extraction. Excavating and treating the soil would eliminate the source of ongoing ground water contamination. Vapor extraction removes volatile chemicals from the soil by applying a vacuum to the soil using a blower and perforated pipes. The vapors would then be treated using a catalytic converter to burn the organic compounds or activated carbon to adsorb the contaminants.

Ground water would be extracted and treated using air stripping or carbon adsorption techniques. Treated ground water would be discharged to the sanitary sewer, on-site storm sewer, or reintroduced on-site through injection wells or an infiltration basin. The specific disposition of treated water would be determined during remedial design. The number of extraction wells would be determined based on the results of further exploratory drilling, which would be a component of remedial design. Ground water pumping rates would be established to provide hydraulic control of the contaminant plume. Compliance monitoring of the effluent would be required to verify that discharge standards are achieved. Air stripper emissions would meet Puget Sound Air Pollution Control Agency (PSAPCA) air emission standards. This alternative would not include long term institutional controls or ground water monitoring once remedial actions achieved cleanup levels.

Estimated Capital Costs: \$633,000
Estimated O&M Costs: \$1,333,000
Estimated Total Costs: \$1,966,000
Estimated Time to Complete: 5 years (minimum ground water pumping time)

7.2.4 Alternative PBS-6: In Situ Vapor Extraction and Air Sparging

Alternative PBS-6 consists of installing vapor extraction wells and air injection (air sparging) wells to treat contaminated soil and ground water. The number, position and extraction rates of the wells would be determined during remedial design. Vapor extraction and air sparging wells typically are used together as an integrated treatment system. Compressed air, which is injected into the aquifer, traps volatile contaminants as the air rises towards the surface. The contaminated vapor from soil and ground water

would be drawn to the surface by applying a vacuum to the vapor extraction wells. Vapor would be treated using a catalytic converter or activated carbon to meet air emission standards. Soil and ground water would be treated until cleanup levels for the respective media were met. Because this alternative does not hydraulically control the contaminated ground water plume, perimeter ground water monitoring would be required to verify that air sparging does not spread the plume. This alternative would not include institutional controls or ground water monitoring once remedial actions achieved cleanup levels and risk based goals.

Estimated Capital Costs: \$456,000

Estimated O&M Costs: \$807,000

Estimated Total Costs: \$1,263,000

Estimated Time to Complete: 2 years

7.3 TACOMA CITY LIGHT DRY WELLS (SOIL)

The "no action alternative" was considered for those portions of the site where contamination was most extensive and there was greatest risk to human health. Only one option for cleanup of PCBs and other contaminants is considered for the Tacoma City Light dry wells because the volume of contaminated soil is small. Although cleanup to MTCA Method A or B residential levels is not required, the property owner has proposed to excavate and transport off-site all soil above MTCA Method B cleanup levels. Approximately 25 cubic yards of soil with PCB concentrations above 50 ppm or endrin concentrations above 0.13 ppm would require off-site incineration to comply with federal regulations (e.g., Toxic Substances Control Act and Land Ban Restrictions). After incineration, the soil residue would be transported to a TSCA compliant facility for disposal.

Remaining soil with PCB and PAH concentrations above MTCA Method B residential cleanup levels would be excavated and transported to an off-site, permitted facility for disposal. This soil would not require incinerations if the PCB concentrations are less than 50 ppm and the endrin concentrations are less than 0.13 ppm. The estimated volume of soil to be disposed at a hazardous waste facility is about 95 cubic yards.

By cleaning up to these levels, no institutional controls, ground water monitoring, and operating or maintenance activities and their associated costs are anticipated for this alternative.

Estimated Capital Costs: \$179,000

Estimated Operations Costs: None

Estimated Total Costs (present worth): \$179,000

Estimated Time to Complete: 10 months

8.0 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

This section discusses the comparison of alternatives with respect to the nine National Contingency Plan (NCP) requirements. The NCP requires that each remedial alternative analyzed in detail in the Feasibility Study be evaluated according to specific criteria. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative in order to guide selection of remedies offering the most effective and efficient means of achieving site cleanup goals. There are nine criteria by which feasible remedial alternatives are evaluated. All nine criteria are important; but they are weighed differently in the decision-making process depending on whether they describe a required level of performance (threshold criteria), provide for consideration of technical or socioeconomic merits (primary balancing criteria), or involve the evaluation of non-EPA reviewers that may influence an EPA decision (modifying criteria).

The remedial alternatives were first evaluated by comparison with the threshold criteria: overall protection of human health and the environment and compliance with ARARs. The threshold criteria must be fully

satisfied by candidate alternatives before the alternatives can be given further consideration in remedy selection. For those alternatives satisfying the threshold criteria, five primary balancing criteria are used to evaluate other aspects of the potential remedies. The five primary balancing criteria are: long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost. No single alternative will necessarily receive the highest evaluation for every balancing criterion. This primary criteria balancing phase of the comparative analysis is useful in refining the relative merits of candidate alternatives for cleanup. The two modifying criteria, state and community acceptance, are used in the final analysis of remedial alternatives and are generally considered in altering an otherwise viable alternative rather than deciding between very different alternatives.

8.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

8.1.1 STF Soil

All the alternatives, except STF-1, the no-action alternative, provide protection of human health and the environment by eliminating, reducing, or controlling risk of exposure to soil contaminants through treatment, engineering controls, and/or institutional controls. Since the no-action alternative does not eliminate, reduce or control any of the exposure pathways, it is, therefore, not protective of human health or the environment and will not be considered further in this analysis as an option for the STF soil.

Alternative STF-4 would provide the highest level of overall protection because soil contaminated above hot spot concentrations would be excavated and disposed of at an off-site hazardous waste facility. This action would eliminate the possibility of contact with this soil as well as eliminate the threat of on-site contaminant leaching. Remaining soil with lower levels of contamination would be capped on-site. Alternative STF-6 would provide the next highest level of overall protection because hot spot soil would be treated (solidified) and left on-site and remaining contaminated soil would be capped on-site. Alternative STF-3 is less protective because there would not be any soil treatment, but contaminated soil would be contained on-site. Exposure to high concentrations of contamination, especially lead, would be possible if the cap was breached and those individuals exposed to the soil were not adequately protected.

Of the alternatives remaining for further consideration, Alternative STF-2 provides the least overall protection because it solely relies on institutional controls to prevent direct contact with contaminated soil.

8.1.2 Pioneer Builders Supply

All of the alternatives, except PBS-1, the no-action alternative, are protective of human health and the environment. Since the no-action alternative does not meet this threshold criteria, it will not be considered further in this analysis.

Alternative PBS-6 provides the highest level of overall protection because the short-term risk of exposure to contaminated soil and ground water is eliminated using in place treatment, which limits the potential for exposure during remedial actions. Alternative PBS-4 is considered to be slightly less protective because treatment would be conducted at the surface. Alternative PBS-2 would be protective by reducing the potential for direct contact or contaminant leaching by installing a cap. Institutional controls would prevent installation of drinking water wells at the site but would not prevent contaminant migration.

8.1.3 Tacoma City Light Dry Wells

The single remedial alternative considered for this area would be protective of human health and the environment by incinerating some of the PCB and other contamination and off-site disposal of the remaining contaminated soil.

8.2 COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of federal, state, and local environmental statutes or provides a basis for invoking a waiver from complying with these requirements.

CERCLA requires that remedial actions satisfy all identified ARARs. An "applicable" requirement directly and fully addresses the situation at the site. It would legally apply to the response action if that action were undertaken independently from any CERCLA authority. A "relevant and appropriate" requirement is one that is designed to apply to problems which are sufficiently similar to the problem being addressed at the site, that its use is well suited to the particular site.

8.2.1 STF Soil

Alternatives STF-3, STF-4, and STF-6 would attain their respective federal, state and local ARARs through treatment, containment, or both. Alternative STF-2 does not meet chemical-specific ARARs because it does not include any action to treat or contain soil contamination.

8.2.2 Pioneer Builders Supply

Alternatives PBS-4 and PBS-6 comply with federal and state standards because contaminated ground water would be treated to reduce contaminant levels to MCLs or to MTCA cleanup levels for those chemicals without MCLs. These alternatives would also require institutional controls to restrict ground water use to non-drinking water purposes if treatment does not achieve risk-based goals. Alternatives PBS-4 and PBS-6 would also comply with state cleanup standards for soil. In Alternative PBS-4, any water discharge standards and air standards would also be met. Any action regarding exceedances of the MTCA TPH standard will be taken by Ecology at its discretion.

The capping and institutional controls provided in PBS-2 do not provide any direct action to reduce the concentration of contaminants of concern down to MCLs or MTCA cleanup levels for ground water or state cleanup standards for soil. Institutional controls would restrict the use of ground water to non-drinking water uses and prevent exposure to ground water contamination.

8.2.3 Tacoma City Light Dry Wells

This alternative would meet federal and state standards for soil through excavation of the soil and off-site treatment and disposal. This alternative would meet hazardous or dangerous waste generator disposal requirements and transportation regulations.

8.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk and the adequacy and reliability of controls.

8.3.1 STF Soil

Alternative STF-4 ranks highest for long-term effectiveness and permanence. It involves removing the soil with the highest concentrations of contaminants and disposing of them at an off-site hazardous waste facility. Remaining contaminated soil would be consolidated and capped. Off-site disposal of contaminants would reduce risks at the site since the highest concentration of contaminants would no longer be on site. Any potential future exposure would be to lower levels of contamination, and exposure would only occur if the cap was breached and unprotected workers (or trespassers) were exposed. Institutional controls would be required to minimize the residual risk.

Alternative STF-6, with consolidation and capping, ranks next because it requires treatment (solidification) of the highest concentrations of contaminants. This solidified soil would be placed on-site. Both treated soil and untreated soil that exceed cleanup levels would be covered with a cap. Contaminants in the solidified soil would be less likely to leach into the ground water or pose a risk through ingestion, should the cap be breached.

Alternative STF-3 ranks lower because it relies solely on capping and institutional controls to prevent exposure to contaminants. This alternative is effective only as long as the cap is properly maintained and institutional controls are enforced.

Alternative STF-2 does not permanently remove health and environmental risk and ranks lowest in terms of long-term effectiveness and permanence.

8.3.2 Pioneer Builders Supply

Alternatives PBS-4 and PBS-6 rank the highest for long-term effectiveness and permanence because they include treatment to reduce the concentration of chemicals in subsurface soil and ground water. Ground water monitoring would be required after cleanup to confirm the effectiveness of the remedy.

Alternative PBS-2 ranks lower because the actions (capping and institutional controls) do not include treatment to permanently reduce the sources of contamination. Long-term management (e.g., inspection and repair) of the cap system would be necessary. Capping and institutional controls, however, would control exposure to soil and ground water contamination.

8.3.3 Tacoma City Light Dry Wells

The preferred alternative would include removal of all soil having chemical concentrations above MTCA Method A or B cleanup levels. The residual risk would be reduced permanently to below MTCA residential soil cleanup levels. Long-term institutional controls, ground water monitoring, and future remedial actions would not be required.

8.4 REDUCTION OF TOXICITY, MOBILITY, AND VOLUME THROUGH TREATMENT

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies in reducing the toxicity, mobility, or volume of the contaminated media.

8.4.1 STF Soil

Alternative STF-6 ranks the highest because it uses treatment (solidification) to reduce the toxicity or mobility of hot spots of contaminated soil. However, solidification would increase the volume of soil to be capped by about 10 percent. Alternative STF-4 could also involve treatment if it is necessary for disposal at an off-

site permitted hazardous waste facility. Alternatives STF-3 and STF-2 do not include treatment of contaminated soil.

8.4.2 Pioneer Builders Supply

Alternatives PBS-4 and PBS-6 provide the greatest reduction in toxicity, mobility, and volume of contaminants in the ground water through treatment of contaminated soil and ground water. For PBS-4, carbon adsorption reduces the contamination in ground water and soil. Spent carbon would be thermally regenerated at a permitted facility, resulting in virtual destruction of the chemicals of concern. Air stripping would transfer contaminants from ground water to air, but the catalytic converter would break down these contaminants. For PBS-6, air sparging transfers contaminants from ground water to vapor, which would then be collected, along with vapor from contaminated soil, and treated by carbon adsorption or catalytic converter. Alternative PBS-2 has no treatment component and would not reduce the toxicity or volume of contaminants other than through natural biodegradation.

8.4.3 Tacoma City Light Dry Wells

The alternative includes off-site incineration of soil containing PCBs above 50 ppm or endrin above 0.13 ppm and achieves reduction in toxicity, mobility, and volume through treatment.

8.5 SHORT-TERM EFFECTIVENESS

Short-term effectiveness refers to the period of time needed to complete the remedy and any adverse impacts on human health and the environment that may be posed during the construction and implementation of the remedy until cleanup levels are achieved.

8.5.1 STF Soil

Short-term risks would be minimal for Alternative STF-2 (Institutional Controls) since no physical work is required (other than fencing and posting warning signs). There would be no risk to the community or workers from physical hazards due to heavy equipment, transportation accidents, or proximity to excavations. STF-2 would take about six months to complete.

Alternative STF-3 ranks next and includes consolidation and capping of soil or in-place capping. Capping would pose limited short-term risks from heavy equipment movement and dust from excavation activities. Short-term risks involved with consolidation and capping are greater compared to in-place capping, since large quantities of soil would be excavated and consolidated in three capped areas. STF-3 would take about 16 to 20 months to complete.

Alternatives STF-6 and STF-4 have the greatest short-term risks because they include excavation and handling of large volumes of contaminated soil. More dust, noise, and truck traffic are expected with these alternatives depending on the volumes of soil being excavated. Alternatives STF-4 and STF-6 would take from about one to five years to complete, depending on the volume of soil removed and/or treated.

Short-term impacts from noise and dust could be controlled through protective equipment for workers and dust control measures. Truck routes could be established to minimize truck traffic problems in the community.

8.5.2 Pioneer Builders Supply

Alternative PBS-2 has the least significant short-term impacts because the capping is not extensive and would take a short time to construct. The need for continued ground water monitoring would be evaluated after five years.

Alternative PBS-6, In-situ vapor extraction with air sparging ranks next because it does not include excavation of contaminated soil or extraction of contaminated ground water and thus would limit direct exposure of workers to contaminants. Installation of wells and operation of the treatment systems would not significantly affect workers or the community. The estimated completion time is about two years.

Alternative PBS-4 potentially could have the most significant short-term impacts because it involves excavation and treatment of soil, and ground water extraction, treatment and discharge. Alternative PBS-4 is estimated to take one year to meet soil cleanup levels, and about five years or longer to meet ground water cleanup levels.

8.5.3 Tacoma City Light Dry Wells

Since the volume of soil being excavated and handled is small, this alternative would provide low short term risk to workers and the environment. Workers could control their exposure by using protective clothing and respirators (if required). Equipment would be washed to prevent tracking of chemicals off-site. The estimated time for cleanup for this action is six to ten months.

8.6 IMPLEMENTABILITY

Implementability addresses the technical and administrative feasibility of the alternative and the availability of services and materials required to implement the alternative.

8.6.1 STF Soil

All alternatives are technically and administratively feasible, and the required goods and services are readily available. Alternative STF-2 is the easiest cleanup alternative to implement, requiring only institutional controls. Alternative STF-3 ranks next since it includes only capping or consolidation and capping of contaminated soil.

Alternatives STF-4 and STF 6 require removal and/or treatment of contaminated soil, with volumes ranging from 7,800 to 138,000 cubic yards. Treatment or off-site disposal of small volumes of soil are easier to implement because they involve handling less soil and would take less time to complete.

8.6.2 Pioneer Builders Supply

All alternatives are technically and administratively feasible and the required goods and services are readily available. Alternative PBS-2 is the easiest to implement, since an asphalt cap would be easy to construct. Restrictions on property and ground water use could be readily implemented.

Alternative PBS-6 would be the next easiest alternative to implement and includes in-situ vapor extraction, a common technology for removing volatile organic chemicals from soil. The air sparging component of this alternative is an innovative technology which is being used more commonly now to cleanup contamination at underground storage tank (UST) sites similar to this one. A pilot study and testing of the system during installation to determine the exact configuration, spacing, and optimum operating conditions would be required. Despite being innovative, the technical aspects and components of the system are not complicated and can be readily designed, constructed and operated. Additional characterization of the contaminant plume, including installation of additional monitoring wells, modelling, and a pilot study would also be required.

Alternative PBS-4 uses readily available technology. It would require installation of additional monitoring wells. Modelling and field testing would be required to define the maximum extent of the plume and to adequately size the treatment system. This alternative, however, ranks lowest in implementability because it includes the most complex technical components, including excavation of soil, aboveground treatment of soil, and ground water extraction, treatment and discharge. Maintenance would be required for the

equipment. Discharge of the treated water could be readily accomplished; however, authorization to discharge to the City of Tacoma's sanitary sewer or an NPDES permit for discharge to surface water or a state waste discharge permit for discharge to the ground would be required.

8.6.3 Tacoma City Light Dry Wells

The alternative is technically and administratively feasible and the required goods and services are readily available. Equipment, facilities, and methods that would be used are common to construction and cleanup activities. Off-site incinerators and disposal facilities are available.

8.7 COST

The total cost of the alternatives developed during the FS is summarized in Table 8-1. These costs are estimated for purposes of comparison and are considered to be accurate to within -30% to +50%. Costs are described using the present worth methodology with a discount rate equal to five percent. Cost estimates include direct and indirect capital costs, as well as annual operations and maintenance costs. Further details on the cost estimates for alternatives can be found in Appendix F of the FS.

A cost sensitivity analysis was presented in the Feasibility Study which looked at the impact of varying the STF soil hot spot concentrations on the cost of treatment. Since the greatest volume of contaminated soil is associated with lead contamination, the sensitivity analysis focused on the cost of lead treatment. This analysis showed that the cost effectiveness of treatment increased uniformly until 18,000 ppm lead (Figure 8-1). The unit treatment cost (in dollars/pound) increases significantly as the hot spot concentration is reduced below 18,000 ppm. This is because the volume of material to be treated rose significantly as lead concentrations decreased.

Figures 8-2 and 8-3 show the increase in costs to treat 18,000 ppm lead compared with the benefits derives (mass or volume treated). These volumes are for lead only. These values are higher when all chemicals of concern are considered. The cost of treating lead increases from \$5,037,000 at 18,000 ppm lead to \$12,400,000 at 16,000 ppm lead. This is an increase in cost of about 140 percent for a small decrease (11 percent) in the lead concentration to be treated. This analysis played an important part in determining the cost effectiveness of treatment and the selection of the final remedy for STF soil.

8.8 STATE ACCEPTANCE

Ecology has been involved with the development and review of the RI/FS, the Proposed Plan, and the ROD for the cleanup of the South Tacoma Field Superfund site. The ROD describes Ecology's understanding of the current situation and the current risks to human health and the environment. Ecology has identified Total Petroleum Hydrocarbons (TPH) as a potential contaminant of concern at Pioneer Builders Supply. CERCLA requires cleanup of hazardous substances that threaten human health or the environment. The definition of hazardous substances in CERCLA excludes petroleum and petroleum products, which is what TPH measures. However, individual constituents of petroleum (e.g., benzene, toluene) that have migrated into environmental media, such as ground water or soil, are hazardous substances that can be addressed under CERCLA. Therefore, while this cleanup action addresses certain individual constituents of TPH, any additional action regarding exceedance of the MTCA TPH standard will be taken by Ecology at its discretion. With this caveat, the state approves this ROD and believes it provides measures that will fulfill the requirements of Washington law and regulation for the site.

8.9 COMMUNITY ACCEPTANCE

EPA has carefully considered all comments submitted during the public comment period and has taken them into account during the selection of the remedy for the STF site. Members of the public were concerned about the rationale for using industrial cleanup levels at the site, and EPA's proposed selection of on-site treatment of hot spots of contamination as opposed to removal and off-site disposal. The PRP Site Group commented that Alternative 3, Containment (capping) of contaminated soil, with no consolidation or

TABLE 8-1 ESTIMATED COSTS

Alternative	Capital Costs	O&M	Total
STF Soil			
STF-2 Institutional Controls	\$10,000	\$450,000	\$460,000
STF-3 Cap only	\$6.6 Million	\$2.0 Million	\$8.6 Million
STF-3 Consolidate and cap	\$8.6 Million	\$1.6 Million	\$10.2 Million
STF-4 Off-site Disposal of hot spots, cap	\$9.3 - 57.4 Million	\$1.4 - 1.9 Million	\$11.2 - 58.8 Million
STF-4 Off-site disposal of hot spots, consolidate and cap	\$11.7 - 59 Million	\$893,000 - 1 Million	\$12.8 - 59.9 Million
STF-6 On-site treatment of hot spots, cap	\$9 - 39.8 Million	\$2.0 - 2.9 Million	\$11.9 - 42.7 Million
STF-6 On-site treatment of hot spots, consolidate and cap	\$11-42 Million	\$1.6-2.4 Million	\$12.6-44.4 Million
Pioneer Builders Supply			
PBS-2 Cap	\$8,000	\$606,000	\$614,000
PBS-4 Excavate and treat soil, pump treat and discharge ground water	\$633,000	\$1.33 Million	\$2.0 Million
PBS-6 Air sparging and in-ground vapor extraction	\$456,000	\$807,000	\$1,263,000
City Light Dry Wells	\$179,000	\$0	\$179,000
The Selected Remedy			
STF-6 On-site treatment of hot spots (18,000 ppm treatment threshold for lead), PBS-6, City Light Dry Wells	\$14.8 Million	\$2.3 Million	\$17.3 Million

Figure 8-1 Cost of Lead Treated
vs. Lead Concentration

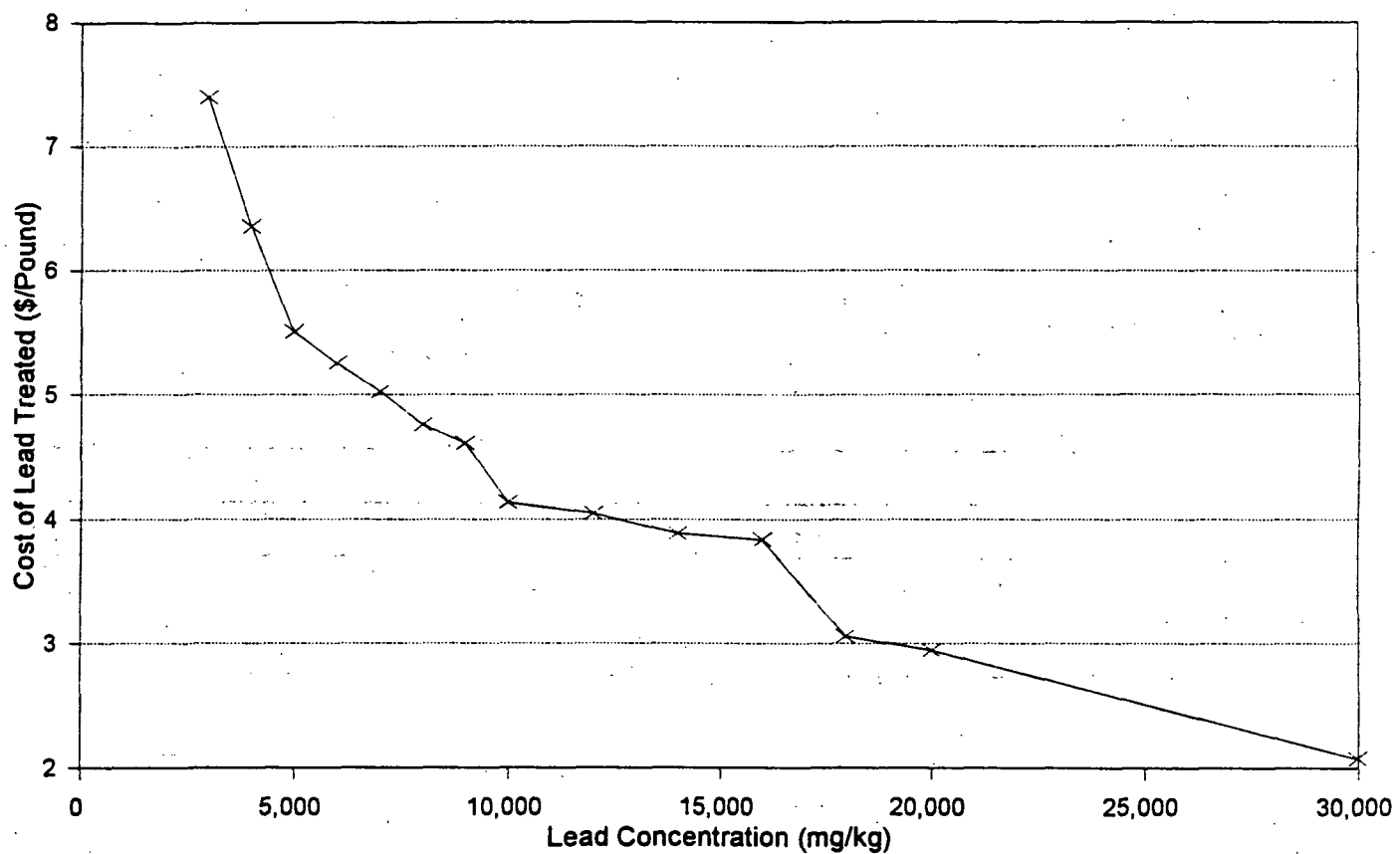


Figure 8-2 Soil Volume vs. Lead Concentration

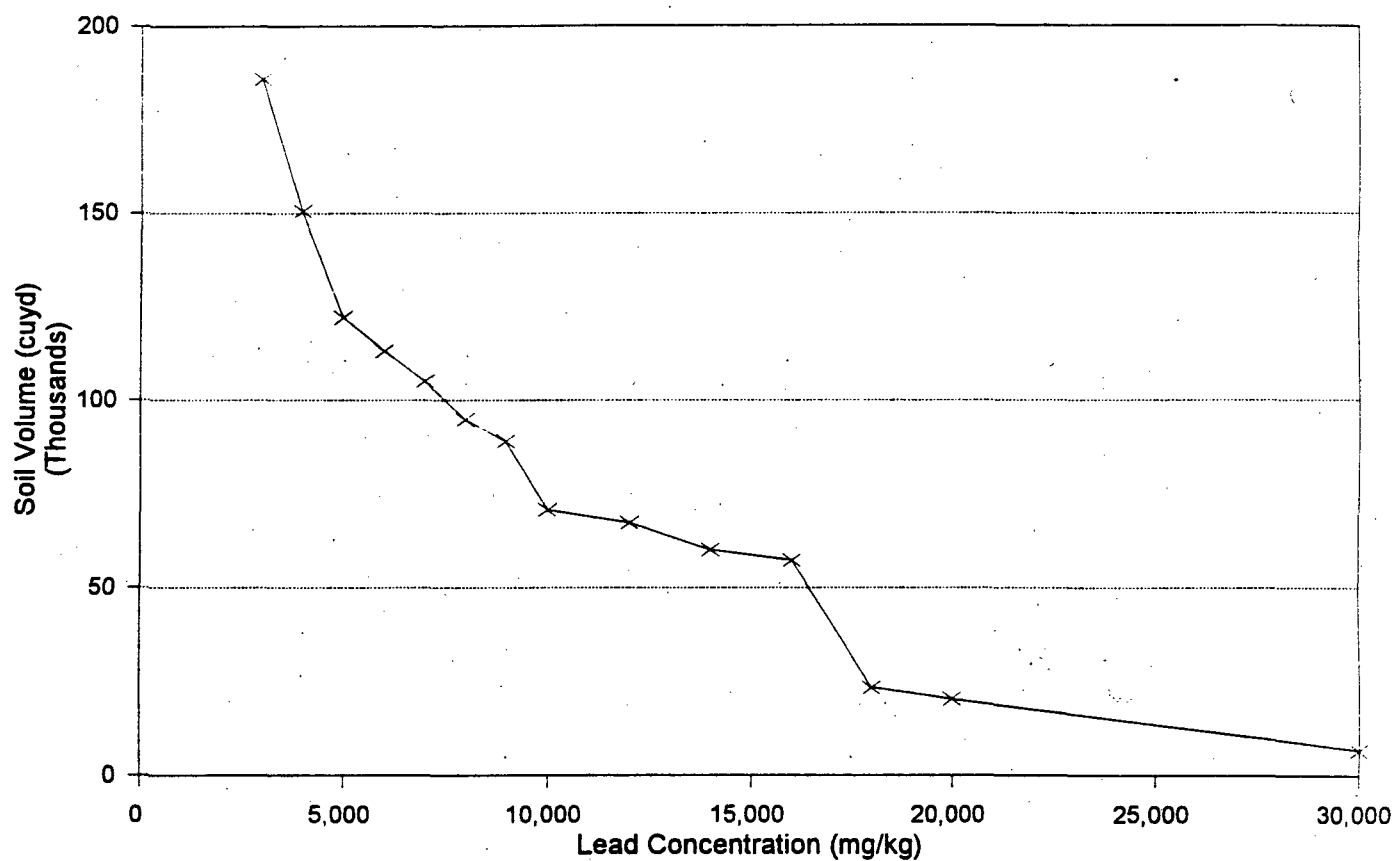
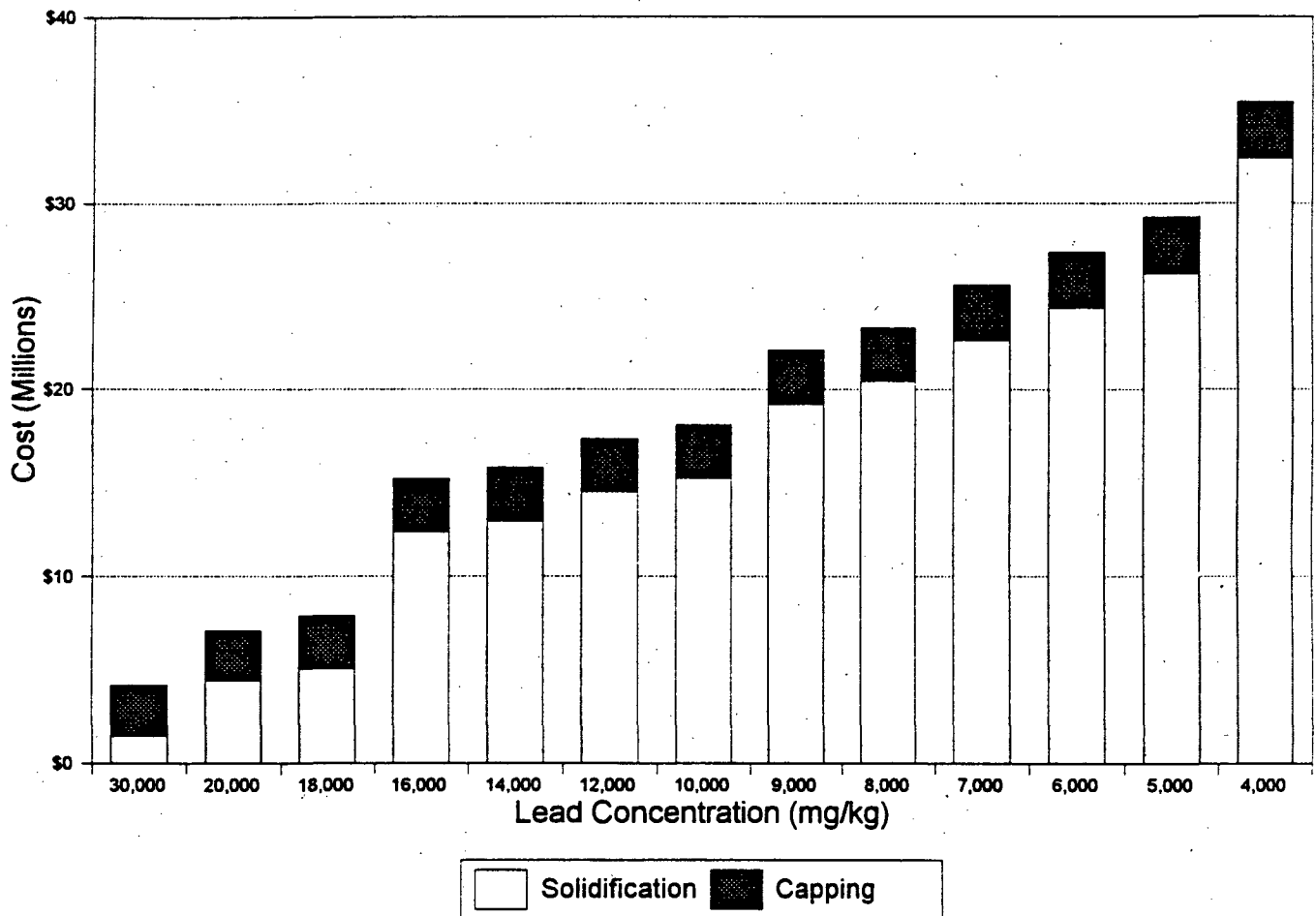


Figure 8-3 Cost of Remediation
vs. Lead Concentration



treatment, is a more cost effective remedy and is as protective as EPA's preferred alternative. EPA responses to comments received during the public comment period are included in the attached Responsiveness Summary (Appendix A).

9.0 THE SELECTED REMEDY

EPA's selected remedy, as modified by public comments, combines elements from several alternatives described above. The selected remedy meets the requirements of the two mandatory threshold criteria, protection of human health and the environment, and compliance with ARARs. EPA and the Washington Department of Ecology believe the following actions provide overall protection of human health and the environment while providing the best balance of benefits and trade-offs for the South Tacoma Field site. The selected remedy uses a combination of treatment, containment, and institutional controls to achieve optimum compliance with the five balancing criteria: long-term effectiveness, short-term effectiveness, implementability, reduction in toxicity, mobility and volume through treatment, and cost. EPA believes that treatment of hot spots of contaminated soil meets the statutory preference for treatment as a principal element of the remedy. Treatment of soil hot spots with engineering controls is a more permanent solution than containment (capping) alone. Long term effectiveness and permanence, reduction in toxicity mobility and volume through treatment, and cost effectiveness are the three balancing criteria that had the most influence on selection of the remedy.

9.1 STF SOIL

9.1.1 Treatment of Soil Hot Spots

The selected remedy for STF soil hot spots (except for PCB contaminated soil) is to excavate and treat on-site, using solidification, an estimated 22,000 cubic yards of soil. The concentration at which treatment must occur for hot spots of contaminants of concern are listed below in Table 9-1.

Table 9-1

Hot Spot Concentration Threshold for STF Soil

Medium	Hot Spot Concentration Threshold	
Soil	Arsenic	570 mg/kg ^a
	Lead	18,000 mg/kg ^b
	Carcinogenic PAHs (Total)	50 mg/kg ^c
	PCBs (Total)	50 mg/kg ^d
	Copper	45,000 mg/kg ^e

^a Set at the 1×10^{-4} risk level using MTCA exposure assumptions

^b Set at 18,000 ppm based on the cost sensitivity analysis in the FS. This level was chosen because the cost effectiveness of treatment decreases at levels below 18,000 mg/kg

^c Set at 2.5 times the MTCA industrial Method A concentration

^d TSCA requirement

^e Based on leaching to ground water

The PRPs shall excavate hot spots of contaminated soil, solidify the soil by adding Portland cement or other binding agents and water, spread on-site in 6- to 12-inch lifts, and then cap the treated soil with a soil or asphalt cap as described below. The PRPs shall conduct soil treatment in an area that has been graded to manage surface water run-on and runoff. The PRPs shall cover temporary soil stockpiles to prevent contamination of runoff. The PRPs shall test coupons of treated soil to determine compliance with the Land Disposal Restrictions as discussed in 40 C.F.R. Part 268.

The PRPs shall conduct air monitoring during all excavation, treatment, and earth-moving activities to verify that standards for airborne contaminant emissions are not exceeded in the work area or at the property boundary of the site.

Soil contaminated with PCBs above 50 ppm was found in only one location at Pioneer Builders Supply (one sample at 56 ppm). If additional sampling at this location confirms PCB concentrations above 50 ppm, then the PRPs shall excavate this soil for either incineration off-site at an approved incinerator, or disposal at a permitted chemical waste landfill.

9.1.2 Containment (Capping) of Contaminated Soil

The PRPs shall excavate, consolidate, and cap, in three general locations (as shown in Figure 7-1), STF soil with contamination above the levels listed in Table 9-2, and below the hot spot concentrations (Table 9-1).

Chemicals listed in Table 9-2 are those which most affect the nature and extent of the cleanup action. Any other contaminants in soil which exceed Method A industrial cleanup levels shall also be excavated, consolidated, and contained as described below.

Table 9-2
Soil Capping Levels for South Tacoma Field

Medium	Capping Levels	
Soil	Arsenic	200 mg/kg ^a
	Lead	1000 mg/kg ^a
	Carcinogenic PAHs (Total)	20 mg/kg ^a
	PCBs (Total)	10 mg/kg ^a

^a MTCA industrial method A soil cleanup level

Excavation of soil is not required beyond a depth of one foot. If, after excavation of one foot of soil, an area is still contaminated above the soil cleanup levels in Table 9-2, (based on sampling conducted by the PRPs), the PRPs shall cap this area. At their discretion, the PRPs could choose to continue excavating below a depth of one foot until contaminants in soil are below cleanup levels or until the MTCA fifteen foot point of compliance is met. If cleanup levels are achieved, capping would not be required in that location.

The areas which shall be excavated, consolidated and capped shall be determined using the data and sampling grids developed during the RI. The decision to excavate a sampling grid may be modified if additional samples collected in that grid indicate that chemicals in the soil are below the capping levels

identified in Table 9-2. If the PRPs want to use a statistical approach to determine areas needing excavation, consolidation, and capping, then statistical averaging of data shall be conducted on additional the data collected during RD/RA from the locations within the existing grid system. The PRPs shall submit the statistical approach to EPA for review and approval.

Two types of caps, asphalt and soil, are allowed. The soil cap shall consist of a minimum of six inches of bank run gravel topped by a minimum of six inches of top soil and vegetation. Before placing the soil cap the area shall be cleared; and if required to control erosion, the subgrade shall be graded to improve drainage. The asphalt cap shall consist of a minimum of three inches of asphalt overlaying a minimum of six inches of crushed rock. A storm drain system shall be designed in accordance with state and local standards for areas where asphalt caps are constructed. The asphalt and soil caps, once in place, shall protect against exposure to contaminated soil. To the maximum extent practicable, the PRPs shall place the asphalt cap in those areas where the highest concentrations of untreated contamination is located to further ensure that soil in these areas will be less likely to be disturbed during future development of the site. The PRPs shall periodically inspect all capped areas and conduct repairs as necessary to ensure the integrity of the cap.

If it is the PRP property owners' intent to develop portions of the site, including some of the capped areas, as an industrial park, future development must be designed and constructed to maintain the integrity of the capped areas. The PRPs shall submit a site development plan during Remedial Design identifying the locations where asphalt and soil caps would be used and discussing how future land development will be compatible with and maintain the integrity of the capped areas.

In some areas of the site, particularly the grassland portion of the former Swamp/Lakebed area, subsurface soil containing contaminants above the cleanup levels listed in Table 9-2 is covered with relatively uncontaminated soil. These areas are not included in the acreage to be capped as discussed above. Verification sampling shall be conducted during remedial design in these areas to confirm that at least one foot of soil, functionally equivalent to the emplaced soil caps, is in place above the contaminated soil. If less than one foot of soil is found to be present in these areas, or if the existing surface soil characteristics are insufficient to provide protection against contact, then the PRPs shall place a soil cap or asphalt cap in these areas, as described in the previous paragraph.

9.1.3 Institutional Controls

Since the primary cleanup actions to be taken at the site are designed to protect industrial workers and are not designed to be protective of residential or recreational uses, the PRPs shall implement institutional controls as part of this portion of the selected remedy to protect against these uses. Institutional controls shall include, but are not limited to: deed restrictions, physical restrictions (e.g., fencing, barriers), warning signs, safety measures, and educational programs.

The PRP property owners shall place deed restrictions on all properties where soil contamination exceeds the MTCA residential cleanup levels as shown in Table 9-3. The deed restrictions shall be subject to EPA review and approval and shall state that, as long as soil contamination exceeds the MTCA residential cleanup levels, land use for these areas is restricted to industrial purposes as defined by the Washington Model Toxics Control Act (RCW 70.D.020), as amended, and consistent with the city zoning code. The deed restriction shall also include information on the levels and location of contamination found on the property(ies), and whether any action (e.g., treatment or capping) was taken on the property. It shall also discuss measures that must be taken that minimize soil disturbances during site development, routine maintenance or repair activities and that are fully protective of workers; for the proper disposal of soil, and to maintain the integrity of the selected remedy, as applicable. The PRPs shall notify EPA and Ecology of any future development activities which result in changes to the current industrial use of the site so that additional cleanup measures can be identified and implemented as appropriate.

During implementation of the remedy, safety measures shall include air monitoring to ensure that the dust control measures are sufficient to protect on-site and nearby workers and the community. At a minimum, dust suppression techniques shall be used during excavation activities such that a "no visible dust" standard is achieved. Other safety measures shall include covering of any stockpiled materials, lining and covering truck beds when transporting contaminated materials, removing soil from truck wheels before travel on public roads, and the implementation of a transportation plan to establish local truck routes to minimize noise and disruption to the community.

Safety and health measures for remediation workers shall be detailed in a site health and safety plan submitted during RD/RA.

Educational programs and safety procedures shall be developed for future (post-cleanup) excavations so that contact with contaminated soil is minimized, and so that such soil is appropriately disposed. These programs and safety procedures shall address significant site development projects as well as routine utilities installation and maintenance projects.

Educational programs and materials shall be implemented and distributed to inform the community (e.g., nearby residents and current and future on-site workers) about the hazards remaining at the site. The educational information distributed to the community shall explain that the cleanup remedy is designed to protect industrial workers, discuss the remaining chemical and physical hazards at the site, and discourage trespassing.

Fencing and other barriers shall be used to restrict access to the site in areas where industrial cleanup levels are exceeded, and to prevent unauthorized (e.g., recreationalist/trespasser) access to and use of the soil-capped areas. Existing fences or natural (vegetative) barriers shall be incorporated into the design. Warning signs shall also be posted at the site to discourage trespassing. The configuration and locations of the fencing, barriers and warning signs shall be submitted during Remedial Design and shall be consistent with the site development plan discussed in Section 9.1.2, above.

9.1.4 Ground Water Monitoring

Ground water monitoring, including monitoring of the petroleum hydrocarbon contamination found at the Amsted property, shall be conducted as part of the cleanup remedy for this portion of the site. EPA has determined that, while some contaminants have occasionally exceeded drinking water standards at various monitoring wells, there is no defined plume of contamination (other than that found at Pioneer Builders Supply) that warrants further cleanup action. However, the PRPs shall monitor the ground water for changes to the current low levels of contamination in the ground water that may result from cleanup activities, off-site discharges (from the City of Tacoma's two storm water outfalls), future site activities, or from leaving untreated hazardous substances in place to ensure that ground water levels stay below federal drinking water standards (Maximum Contaminant Levels) or health based standards. EPA will use the monitoring data to determine trends in ground water quality. EPA will review the monitoring program every five years to determine whether additional actions are required or whether the monitoring program should be modified or discontinued.

Table 9-3

MTCA Method B Residential Soil Cleanup Levels for South Tacoma Field

Medium	Cleanup Level	
Soil	Aluminum	80,000 mg/kg ^a
	Antimony	32 mg/kg
	Arsenic	20 mg/kg ^b
	Beryllium	0.23 mg/kg
	Copper	2,960 mg/kg
	Lead	250 mg/kg ^b
	Manganese	11,200 mg/kg
	Zinc	24,000 mg/kg
	Aldrin	0.059 mg/kg
	Carcinogenic PAHs (Total)	1 mg/kg ^b
	3,3-Dichlorobenzidine	2.2 mg/kg
	PCBs (Total)	1 mg/kg ^b
	Pentachlorophenol	8.3 mg/kg

^a Source: PA, April 8, 1993, letter from EPA to Burlington Northern Railroad
^b Method A residential cleanup level

9.1.5 Monitoring in the Wetlands/Drainage Channel

EPA concurs with the conclusion of the RI that the major source of the surface water and sediment contamination found in the wetland and drainage channel results from storm water discharging on-site from two City of Tacoma outfalls. Data from storm water run-on, run-off, surface water and sediment sampling indicate that contamination in the water is settling out in the soil and sediments in this area. The long drainage channel serves as a holding basin with water flowing off-site only after major storm events. The settling of contaminants out of the water into the sediments and soil of the wetland/drainage channel is a benefit since, generally, water quality leaving the site (and ultimately discharging to Flett Creek) is of better quality than the water entering the site. The wetlands/drainage channel area is providing a beneficial use by filtering the storm water contamination coming from off-site. Concentrations of lead and PAHs in sediments in portions of the wetlands/drainage channel exceed the MTCA industrial cleanup levels, and there is some affect on ground water quality (e.g., low pH in a nearby monitoring well) which may be caused by the storm water flowing onto the site. EPA has determined that the storm water impacts on surface water, sediments and ground water do not represent an imminent and substantial endangerment to public health, welfare, or the environment. EPA does, however, intend to address the storm water discharge and potential future impacts from this discharge through other EPA or state programs.

The PRPs shall monitor storm water run-on, run-off, on-site surface water and sediment for changes to the current low levels of contamination that may result from storm water discharge to the site. The data will be

used to monitor trends in sediment and water quality in the wetlands/drainage channel and to determine whether continued discharge of storm water will have a negative effect on ground water quality beneath the site. EPA will review the monitoring program every five years to determine whether additional actions (e.g., cleanup of storm water, sediment, ground water) are required (under Superfund or other EPA programs) or whether the monitoring program should be modified or discontinued.

Cost Estimate (+50 to -30 percent) for the Selected Remedy for STF Soil

Estimated Capital Costs: \$14,136,000
 Estimated O&M Costs: \$1,688,000
 Estimated Total Costs: \$15,824,000
 Estimated Time to Complete: 20 months

9.2 PIONEER BUILDERS SUPPLY

9.2.1 Treatment of Soil and Ground Water

The selected remedy for soil and ground water contamination associated with the former USTs at Pioneer Builders is Alternative PBS-6, air sparging and in situ vapor extraction. The PRPs shall implement this remedy by installing air injection wells screened in the ground water and vapor extraction wells screened in the unsaturated zone. Extracted vapors shall be treated using a catalytic convertor or activated carbon to reduce the emission of contaminants in accordance with PSAPCA requirements. The vapor treatment method shall be specified in remedial design. The PRPs shall treat contaminated soil and ground water to levels at or below those described in Table 9-4.

Table 9-4

Cleanup Levels for Pioneer Builders Supply

Medium	Cleanup Levels	
Subsurface Soil	Benzene	0.5 mg/kg ^a
	Toluene	40 mg/kg ^a
	Ethylbenzene	20 mg/kg ^a
	Xylenes	20 mg/kg ^a
	TPH	100-200 mg/kg ^{a,b}
Ground water	1,1,2-Trichloroethane	5 ug/L ^c
	Naphthalene	32 ug/L ^d
	Benzene	5 ug/L ^c
	Toluene	1000 ug/L ^c
	Ethylbenzene	700 ug/L ^c
	Xylene	10,000 ug/L ^b
	TPH	1000 ug/L ^{a,b}

^a MTCA Industrial Method A

- b Enforcement of this standard will be taken by Ecology at its discretion.
- c Cleanup level set at federal drinking water standard. If cleanup to these federal drinking water standards is achieved and the ground water still does not achieve the MTCA cumulative risk requirement of risks no greater than 1 in 100,000 or a Hazard Index no greater than 1, then ground water use will be restricted to non-drinking water purposes.
- d MTCA Method B

Insufficient environmental data are currently available to define the extent of soil and ground water contamination at Pioneer Builders Supply. The PRPs shall collect additional data during remedial design to fill the data gaps. The PRPs shall install ground water monitoring wells to determine the size of and to monitor the contaminant plume. The number and location of additional ground water monitoring wells shall be approved by EPA during Remedial Design. The PRPs shall use this information to conduct a pilot study and testing of the extraction/treatment system during Remedial Design to determine the exact configuration, spacing, and optimum operating conditions of the system. The pilot system shall be designed and constructed such that it can be incorporated into the final extraction/treatment system. If the contaminated ground water plume is determined to be expanding or migrating in spite of remedial action discussed above, then additional actions (system expansion or hydraulic control) shall be required.

The PRPs shall implement institutional controls, in the form of restrictions on ground water use (to non-drinking water purposes) in the vicinity of Pioneer Builders Supply as part of the selected remedy. The restricted use area shall be defined during RD using data collected by the PRPs as part of the pilot study, including data from new and existing ground water monitoring wells. This restriction shall continue until ground water cleanup levels are achieved throughout the contaminant plume and MTCA cumulative risk requirement of risks no greater than 1 in 100,000 and a Hazard Index no greater than 1 are achieved.

The PRPs shall also conduct compliance monitoring to determine the effectiveness of the remedy in cleaning up the contamination in the soil and ground water to determine that compliance with cleanup levels has been achieved and the operation extraction/treatment system can be discontinued. As part of this monitoring program, the PRPs shall monitor for TPH, in addition to other chemicals of concern. Enforcement of the TPH standard, however, will be taken by Ecology at the department's discretion. The TPH cleanup level will not be used by EPA to determine when compliance with cleanup levels has been achieved and the extraction/treatment system can be shut down. EPA will notify Ecology when the cleanup levels (in Table 9-3) have been achieved prior to discontinuing treatment. EPA will review the ground water monitoring program every five years to determine whether additional actions are required or whether the monitoring program should be modified or discontinued.

Cost Estimate for the Selected Remedy for Pioneer Builders Supply

Estimated Capital Costs: \$456,000
Estimated O&M Costs: \$807,000
Estimated Total Costs: \$1,263,000
Estimated Time to Complete: 2 years

9.3 TACOMA CITY LIGHT DRY WELLS (SOIL)

The PRPs shall excavate contaminated soil in the dry wells with PCB concentrations above 50 ppm or endrin concentrations above 0.13 ppm and transport the soil off-site for incineration. The volume of contaminated soil that would be incinerated is approximately 25 cubic yards.

The PRPs shall excavate soil in the dry wells with PCB, PAH, and other chemical concentrations above the MTCA Method B residential cleanup levels and transport these soil to an off-site, permitted hazardous waste landfill for disposal. Cleanup Levels are shown in Table 9-5. The estimated volume of soil to be disposed at an off-site permitted facility is about 95 cubic yards.

Table 9-5

Method B Cleanup Levels for Tacoma City Light Dry Wells

Medium	Cleanup Levels	
Soil	Aldrin	0.059 mg/kg
	Carbazole	50.0 mg/kg
	Carcinogenic PAHs (Total)	1.0 mg/kg
	1,4-Dichlorobenzene	42 mg/kg
	3,3-Dichlorobenzidine	2.2 mg/kg
	PCBs (Total)	1.0 mg/kg
	Pentachlorophenol	8.3 mg/kg

The PRPs shall conduct confirmational sampling to determine that compliance with MTCA Method B residential cleanup levels has been achieved. The PRPs shall backfill the dry wells with clean soil and install catch basins. Once cleanup levels have been achieved, no institutional controls, ground water monitoring, operation and maintenance activities, or other long-term actions will be required for this area.

Estimated Cost for the Selected Remedy at the Tacoma City Light Dry Wells

Estimated Capital Costs: \$179,000

Estimated O&M Costs: none

Estimated Total Costs: \$179,000

Estimated Time to Complete: 10 months

9.4 TOTAL ESTIMATED COST OF THE SELECTED REMEDY

The total estimated cost of the selected remedy including remedial actions for the STF soil, soil and ground water at Pioneer Builders Supply, and the Tacoma City Light dry wells is shown below. These costs are estimated and are considered to be accurate to within -30% to +50%. Costs are described using the present worth methodology with a discount rate equal to five percent. The cost estimate includes direct and indirect capital costs, as well as annual operations and maintenance costs.

Estimated Capital Costs: \$14,800,000

Estimated O&M Costs: \$2,500,000

Estimated Total Costs: \$17,300,000

10.0 STATUTORY DETERMINATIONS

EPA's primary responsibility under CERCLA is to ensure that remedial actions are undertaken which protect human health, welfare, and the environment. In addition, Section 121 of CERCLA, 42 U.S.C. §9621, establishes cleanup standards which require that the selected remedial action complies with all ARARs established under federal and state environmental law, unless such requirements are waived by EPA in accordance with established criteria. The selected remedy must also be cost-effective and must utilize permanent solutions, alternative treatment technologies, or resource recovery technologies to the maximum

extent practicable. CERCLA regulations include a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous waste. The following sections discuss how the selected remedy for the site meets these CERCLA requirements.

10.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Long-term protection of human health is obtained by excavation and treatment of soil hot spots (STF soil), incineration of some PCB and pesticide contaminated soil and off-site disposal of contaminated soil above MTCA Method B levels (City Light), by capping soil contaminated above MTCA industrial soil cleanup levels treatment of soil and ground water (at Pioneer Builders Supply) and through the use of institutional controls to restrict access to and use of contaminated soil and ground water. These actions will eliminate, reduce, or control exposure to contaminants and will reduce contaminant toxicity and mobility.

Implementation of the cleanup remedy will achieve protection of human health through compliance with OSHA requirements, the use of personal protective equipment, and other safety measures and engineering controls. Short term risks to the community during implementation of the remedy will be minimized through dust control and other protective measures. Protection of the environment will be obtained during remediation by covering stockpiles and using berms and ditches around excavations and other "best management practices" to control contaminated runoff. In addition, the environment will be protected from air pollution through compliance with the promulgated substantive requirements of the Puget Sound Air Pollution Control Agency (PSAPCA).

Long-term maintenance will be required for the selected remedy. The cap has moderate permanence and requires periodic maintenance. Site-wide water monitoring will be required after remediation. Five-year reviews of the site wide ground water, storm water, surface water, and sediment quality trends will be conducted to determine if additional source control or ground water treatment actions are required or if the ground water monitoring program should be modified or discontinued.

10.2 COMPLIANCE WITH ARARS

The selected remedy will meet all ARARs that have been identified. The ARARs that have been identified for the STF site include the following:

10.2.1 Chemical-Specific ARARs

Chemical-specific requirements are usually health-based or risk-based numerical values or methodologies that establish the acceptable amount or concentration of a chemical in the ambient environment.

- 1. Safe Drinking Water Act MCLs and non-zero MCLGs, 40 C.F.R. 141; State Board of Health, Public Water Supplies (RCW 43.20; WAC 248-54).**

These requirements govern public water supply systems, set MCLs for various parameters, and set minimum water quality monitoring requirements. These requirements are **applicable** for off-site drinking water supplies and for on-site and off-site ground water. The City of Tacoma uses the upper aquifer as a source of drinking water and has nearby production wells. The selected remedy will comply with these regulations and ground water monitoring will be used to verify that chemical concentrations in ground water are below MCLs and non-zero MCLGs throughout the affected portions of the aquifer.

2. Washington State Model Toxics Control Act (RCW 70.105D; WAC 173-340).

MTCA soil cleanup levels for protection of human health in a residential setting and for protection of ground water from contaminants leaching from soil are **applicable** and will be met through excavation and treatment of hot spots, capping areas exceeding industrial cleanup levels, and institutional controls (e.g., restrictions on site use to industrial purposes and access restrictions). MTCA ground water cleanup levels, based on federal and state standards and MTCA method B are **applicable** and will be met throughout the affected aquifer through treatment and institutional controls.

10.2.2 Location-Specific ARARs

Location-specific requirements are restrictions based on the concentration of hazardous substances or the conduct of activities in specific locations. These may restrict or preclude certain remedial actions or may apply only to certain portions of the site.

1. **Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands, May 24, 1977 incorporated in 40 C.F.R. Part 6, Appendix A; Federal Clean Water Act, Section 404, 42 U.S.C. §1344; City of Tacoma Shoreline Master Program, Chapter 13.10 of Title 13 of the Tacoma City Code.**

These requirements regulate actions that occur in wetlands and flood plains and may be **applicable** to actions that may adversely affect wetlands and flood plains. Remedial activities do not include flood plain development and will not reduce the base flood water storage ability of the floodplain. Remedial activities in the drainage channel at the site will involve institutional controls and access restrictions and are not expected to adversely impact the wetland and surface water drainage channel in the western section of the site.

10.2.3 Action-Specific ARARs

Action-Specific ARARs are technology-based or activity-based controls or restrictions on activities related to management of hazardous wastes. These requirements are triggered by the particular remedial activities selected to cleanup the site.

1. **CAA (42 U.S.C. §§ 7401 et seq.) National Primary and Secondary Ambient Air Quality Standards, 40 C.F.R. Part 50; CAA National Emissions Standards for Hazardous Air Pollutants, 40 C.F.R. Part 60. Washington State Clean Air Act (RCW 70.94; WAC 173-400-460); Puget Sound Air Pollution Control Authority (PSAPCA) Regulations I and III.**

Clean Air Act regulations are **applicable** for on-site air emissions from ground water treatment systems and for control of dust particles emitted into the air during remediation activities. Remedial actions that would result in air emissions will be designed to meet federal and state air quality standards. PSAPCA requirements are **applicable**. Remedial actions that could involve releases of contaminants to air will be performed in compliance with substantive requirements of a PSAPCA permit.

2. **Solid Waste Disposal Act, also known as the Resource Conservation and Recovery Act, Subchapter III, (42 U.S.C. § § 6921-6939; 40 C.F.R. Parts 261, 264, and 268). Washington State Dangerous Waste Regulations (WAC 173-303).**

RCRA and the Washington State Dangerous Waste regulations impose a number of requirements on remediation involving the disposal and/or placement of waste and contains a number of provisions which may apply at the site. RCRA Land Disposal Restrictions (LDRs) place specific

restrictions on certain RCRA hazardous wastes prior to their placement in a land disposal unit. Under CERCLA, placement occurs when wastes are moved from one "area of contamination" (AOC) to another. Therefore, wastes left in place or consolidated within one AOC are not subject to the regulations. For purposes of this ROD, the STF site soil area has been identified as one AOC. LDRs, therefore, are not applicable for containment of soil within the site. EPA has determined that RCRA LDRs are **applicable** to hot spot site soils that are RCRA characteristic waste and are treated on-site. Treated soil will be tested to determine compliance with the Land Disposal Restrictions as discussed in 40 C.F.R. Part 268.

Certain requirements in the RCRA closure standards are **relevant and appropriate**. These requirements will be met by conducting a hybrid-landfill closure at the site which includes a cap to address the direct contact threat, cap maintenance, and ground water monitoring. This approach is being used because residual contamination poses a direct contact threat but does not pose a ground water threat.

State Dangerous Waste regulations may be **applicable** for soil contaminated with PCBs in the concentration range of 1-50 mg/kg and for soil containing inorganics which fail the TCLP test and are considered RCRA characteristic waste.

3. **Toxic Substances Control Act (TSCA 15 U.S.C. §§2601-2671; 40 C.F.R. Part 761.60); WAC 173-303-170 through 202).**

These regulations require that soils with PCBs at concentrations exceeding 50 mg/kg be destroyed by incineration or be disposed in a chemical waste landfill and are **applicable** for PCB contaminated soils that are disposed off-site. The PCB contaminated soil at this site will be handled in accordance with these regulations.

4. **Transportation of Hazardous Materials, 49 C.F.R. 171-177; RCW 46.48 (WAC 446-50).**

These regulations are **applicable** for hazardous or dangerous waste disposed off-site. The selected remedy will comply with these federal and state regulations.

5. **Washington State Minimum Standards for the Construction and Maintenance of Wells (RCW 18.104, WAC 173-160).**

Standards for construction, testing, and abandonment of water and resource protection wells are **applicable** and will be met during the remediation and monitoring.

6. **Washington State Criteria for Municipal Solid Waste Landfills (70.95 RCW, WAC 173-351).**

These regulations are **applicable** for appropriate off-site disposal of solid waste.

10.2.4 Policy, Guidance and Regulations To-Be-Considered

Additional policies, guidance and other laws and regulations to be considered for source control and remedial actions include, but are not necessarily limited to the TSCA PCB Spill Cleanup Policy, 40 C.F.R. §761.120. EPA Guidance on Selecting Remedies at Superfund sites with PCB Contamination (OSWER Directive No. 9355.4-01). EPA Area of Contamination Policy (Preamble to the NCP (Federal Register Volume 55, No. 46, March 8, 1990, pages 8759-8760; Ecology Toxics Cleanup Program Area of Contamination Policy (September 6, 1991). Washington State Department of Ecology Toxics Cleanup Program Guidance for Remediation of Releases from Underground Storage Tanks.

The TSCA PCB Spill Cleanup Policy provides guidance on recommended cleanup levels under certain scenarios. The Superfund PCB guidance recommends cleanup criteria for remediation and specifies long-term management controls for PCB-contaminated media.

The EPA Area of Contamination Policy, in the NCP Preamble, provides guidance regarding how material designated as hazardous waste can be consolidated and contained within an area of contamination without triggering the RCRA Land Disposal Restrictions. The Ecology Area of Contamination Policy addresses how material designated as dangerous waste can be consolidated, contained or treated within an area of contiguous contamination without triggering the state Dangerous Waste regulations.

Occupational Safety and Health Act (OSHA 29 U.S.C. §651). Washington Industrial Safety and Health Act (WAC 296-62). The implementing regulations under OSHA, 20 C.F.R. Parts 1910 and 1926 and the state health and safety regulations are not ARARs. However, these regulations are of general applicability to response actions regardless of ARARs analysis.

10.3 COST EFFECTIVENESS

EPA has determined that the combination of remedial activities identified as the selected remedy will reduce or eliminate the risks to human health and the environment in a cost-effective manner. Because treatment is focused on those areas of the site that have the highest contaminant concentrations and which pose the greatest risk to the environment and human health, costs will be minimized. The contaminants in these areas also have the greatest potential for migration in the environment. Areas of the site containing lower levels of contaminants would be capped, which is protective but less costly than treatment technologies, and appropriate given the lower site risks. The selected remedy would treat approximately 55 percent of the total contaminant mass, but treat only 10 percent of the contaminated soil volume, providing a balance between cost and reduction in toxicity and volume.

10.4 UTILIZATION OF PERMANENT SOLUTIONS AND RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost effective manner for remediation of soil and ground water at the STF site. Of those alternatives that are adequately protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance in terms of long-term effectiveness and permanence, reduction of toxicity, mobility and volume achieved through treatment, short-term effectiveness, implementability and cost, while also considering the statutory preference for treatment as a principle element and considering state and community acceptance.

Treatment of the soil hot spots and treatment of organic contamination in soil and ground water at Pioneer Builders Supply provides long-term effectiveness and permanence and provides a significant reduction of toxicity, mobility and volume while minimizing short-term risks. Containment of less contaminated areas in the STF portion of the site also reduces mobility and provides long-term effectiveness, while minimizing implementation difficulties and costs associated with removal of large and inaccessible quantities of soil.

EPA has determined that the selected remedy will provide protectiveness in a more cost-effective manner than alternatives that treat all contaminated soil and all contaminated ground water but cause significant short-term risks to workers, at disproportionate costs or than lower cost alternatives that consist of little or no treatment, are easily and quickly implementable, but provide little reduction in toxicity, mobility or volume of the contamination.

10.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

The selected remedy treats a significant portion of the site's soil contamination through the use of solidification. Ground water and soil contamination at Pioneers Builder's Supply will be treated using air sparging and in situ vapor extraction. Soil in the Tacoma City Light Dry wells contaminated with PCB concentrations at 50 parts per million will be incinerated. The selected remedy meets the statutory preference for using treatment as a principal element by using these technologies in significant roles in cleanup of the site.

10.6 CONCLUSIONS

The selected remedy achieves the best balance among the nine evaluation criteria. The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable while providing the best balance among the other evaluation criteria. The selected remedy achieves the best balance of tradeoffs with the respect to the primary balancing criteria of long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; short-term effectiveness; implementability; and cost. Additional considerations included the statutory preference for treatment as a principal element and acceptability to the State and the potentially affected community.

11.0 DOCUMENTATION OF SIGNIFICANT CHANGES

Based on new information that came to EPA's attention subsequent to issuance of the Proposed Plan, EPA identified MTCA residential cleanup levels as applicable to the site. In addition, in response to a comment made by the PRP Site Group during the public comment period, EPA re-evaluated the actions for the PCB contaminated soil and included in the selected remedy the additional element of disposal in accordance with TSCA. These changes are logical outgrowths of the information available to the public in the Proposed Plan and the RI/FS reports. Additional public notice or public comment was determined not to be necessary because, based on the information available, the public could have reasonably anticipated the changes described. The following sections discuss in more detail the changes that have been incorporated in the selected remedy.

11.1 CLEANUP LEVELS FOR THE STF SITE SOIL

Based on information in the RI/FS, the Proposed Plan stated that the entire STF site was zoned for industrial uses. EPA and Ecology determined that this made the site eligible to use MTCA industrial cleanup levels as the cleanup levels for the site [pursuant to a recent revision to MTCA, Senate Bill 6123, Subsection 2(13) amendment to MTCA at RCW 70.105D.020(13)]. As a result, the soil cleanup goals presented in the Proposed Plan were selected primarily for protection of industrial workers.

Subsequent to the comment period on the Proposed Plan, new information came to the attention of EPA indicating that a narrow strip of land at the site, along the western boundary, is zoned R-3-T, Residential-Commercial Transitional District. Based on this new information, EPA has determined that MTCA residential cleanup levels do apply to this site since portions of the site are zoned for residential/commercial uses. The determination that MTCA residential cleanup levels are applicable does not significantly affect the cleanup action at the site. The Proposed Plan provided that appropriate institutional controls and deed restrictions be implemented site-wide for ensuring that the entire site was used only for industrial purposes (inclusive of that narrow portion of land) and for protecting against potential exposure to contamination above residential cleanup levels, should the zoning of the site change in the future. The applicability of the MTCA residential cleanup levels does not affect the capping or treatment requirements identified in the Proposed Plan and in this ROD, since these actions are to be implemented at those areas of the site that are zoned for industrial uses. Both the Proposed Plan and the selected remedy in the ROD also require additional cleanup to residential cleanup levels should the property uses change to residential development in the future.

11.2 PCBs IN STF SOIL

EPA identified incineration of soil contaminated with PCBs at concentrations at or exceeding 50 mg/kg in the STF soil portion of the preferred alternative. During the public comment period, the PRPs commented that the maximum concentration of PCBs detected in one soil sample was 56 ppm. The PRPs suggested that this soil could be solidified and returned to the site. The PRPs also stated that since EPA's preferred alternative proposed solidification and containment for soil contaminated with PCBs at 50 ppm, then solidification of PCB contaminated soil that only slightly exceeds the treatment threshold concentration would more than adequately protect human health and the environment. TSCA allows either incineration or disposal in a chemical waste landfill for soil contaminated with PCBs at 50 parts per million and above. TSCA regulations provide for approval of alternative technologies if they are demonstrated to be equivalent to incineration in ability to destroy PCBs. The solidification/stabilization treatment method selected for STF soil would not achieve the same remedial results as incineration. However, Alternative STF-4 in the FS analyzed the option of off-site disposal of PCBs. The selected remedy includes this component of the STF-4 alternative, providing that PCBs in STF soil may be either incinerated or disposed off-site in an approved chemical waste landfill.

APPENDIX A

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

Section 1

Introduction

A. Overview

The purpose of this responsiveness summary is to summarize and respond to public comments submitted on the Proposed Plan for the cleanup of the South Tacoma Field (STF) Superfund Site. The public comment period for the Proposed Plan was held from June 15, 1994 to July 15, 1994. This responsiveness summary meets the requirements of Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

In the Proposed Plan, issued June 15, 1994, the U.S. Environmental Protection Agency (EPA) described alternatives considered for the cleanup of soil and ground water at the STF site. These alternatives were based on information collected during a Remedial Investigation and Feasibility Study (RI/FS) conducted at the site. The purpose of an RI/FS is to conduct a thorough study of the site and to assess potential alternatives to clean up the site. The RI/FS and Proposed Plan were available at the Tacoma Public Library, and copies of the Proposed Plan were mailed to a list of local citizens developed as part of the Community Relations Plan. A copy of the RI/FS was also made available for reference at the location of the public meeting to take comments on the Proposed Plan.

EPA held a public meeting on June 28, 1994 at the Tacoma City Light Auditorium in Tacoma to present the results of the RI/FS and to outline EPA's proposed cleanup plan. About ten people attended the meeting, including some of the Potentially Responsible Parties (PRPs) at the site. Questions that were asked and answered at the public meeting are recorded in the meeting transcript which is available in the Administrative Record for the site at the Tacoma Public Library. Some of those questions are included in this document.

No oral comments were presented at the public meeting and only two people asked questions. Six comment letters were received during the comment period. Members of the community were concerned about the apparent inconsistencies in cleanup standards and remedies at two sites in Tacoma. The PRPs stated that Alternative 3, Containment (capping) of contaminated soils, with no consolidation or treatment, is a more cost effective remedy and is as protective as EPA's preferred alternative.

B. Scope of Response to Comments

The primary purpose of this Responsiveness Summary is to address specific comments on the Proposed Plan.

Section 2

Community Involvement

A. Background

The South Tacoma Field Superfund site is a 260-acre parcel of land located in the southwestern part of the City of Tacoma, Washington. The site is located in a lowland area, which is as much as 150 feet lower than the surrounding uplands. The site is mostly open fields of grass with a few industrial and commercial facilities. The site also includes a former swamp and lake bed which has been filled in and covered with grass. A small wetland, fed by storm water drainage, is also located in this area. Along the western boundary of the site is a channel for storm water entering the site from two City of Tacoma storm sewers.

During the past 100 years, portions of the site have been used for a variety of industrial and waste disposal activities. Past industrial activities include the manufacture and repair of railroad cars; the operation of a brass and iron wheel foundry; the operation and maintenance of an airfield, aircraft refueling depot, and aircraft repair facility; and operation of the City of Tacoma's electric and drinking water utility. Large parts of the former swamp/lakebed area were used to dump industrial and construction materials, including foundry slag and sand from off-site foundries.

Surface soil, and to a lesser extent subsurface soil, in these areas are contaminated to varying degrees with lead, arsenic, copper, and zinc, particularly at the Amsted property and the Burlington Northern Railyard and Dismantling Yard. The metals occur in an irregular pattern that appear to be related to specific historical activities. Polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyl (PCBs) were also detected in some surface and subsurface soil samples.

Pioneer Builders Supply is located in the southeastern portion of the site. Groundwater and subsurface soil are contaminated in a location where underground storage tanks were removed from the property. Soil samples contained gasoline constituents, such as toluene, xylenes, ethylbenzene, and benzene; and 1,2,4-trichlorobenzene; and PCBs. Groundwater samples contained benzene, ethylbenzene, and 1,1,2-trichloroethane. This contamination appears to be localized around the former underground storage tanks.

The Tacoma City Light owns property at the northern end of the site and the property has been paved since 1953. Ten dry wells located on this property were used to drain storm water. Most of these wells have been sealed. Soil samples collected in the dry wells contained elevated concentrations of PAHs, PCBs, and endrin (a pesticide). The data suggest that the contamination is limited to an area within a few feet of each dry well.

The City of Tacoma zoning maps designate most of the STF site as a "Heavy Industrial District." The site has been designated for industrial use since at least the early 1950s. A narrow strip of the site along the western boundary is zoned R-3-T, Residential-Commercial/Transitional. The majority of properties adjacent to the site are currently used or designated for industrial purposes. The area east of the site (between South 38th Street and South 56th Street) is a combination of Heavy Industrial, Light Industrial, and Commercial districts. The area immediately south of the site is a combination of Heavy Industrial and Light Industrial districts.

The area west of the site is zoned for mixed uses. The southern section of the western border of the site is zoned Heavy Industrial. The central section of the western border contains Two-Family Dwelling, Medical Center Transitional, and Commercial districts. The northern portion of the western border

consists primarily of a small Light Industrial district and a Residential/Commercial Transitional district. Despite its title, the latter district is designed primarily for office and institutional land uses according to the City of Tacoma. Many properties west of the site are separated from the industrial uses of the site by a natural buffer area along Tyler Street. That buffer consists of a bluff, steep slopes, a paved road, and vegetated areas along this western boundary of the site.

The area north of the site consists of Light Industrial and Residential/Commercial Transitional districts. The latter district is designed for office and institutional uses.

B. Community Concerns

EPA developed a Community Relations Plan (CRP) for the Commencement Bay Nearshore/Tideflats and Commencement Bay South Tacoma Channel sites. The CRP was designed to promote public awareness of EPA activities and the investigations and to promote public involvement in the decision-making process. The CRP summarizes the concerns of local citizens, interests groups, industries, and local government representatives. In 1991, EPA interviewed members of the community to gain a better understanding of citizen concerns about this site, and to ensure that EPA's planned community relation activities met the community's needs. EPA supplemented the Tacoma Area CRP to reflect these needs and identified a variety of activities to inform and involve the public in the South Tacoma Field RI/FS activities leading up to this ROD. Following is a list of those community concerns and a brief description of EPA's responses to them:

Section 3

Response to Comments Received During the Public Comment Period

This section summarizes and responds to comments received from the public during the public comment period on EPA's Proposed Plan. Comments and responses in this section are arranged by topic. Those which applied to more than one topic were responded to under the heading considered the most appropriate. Paraphrasing was used to incorporate related concerns expressed in more than one comment. Every attempt has been made to respond to concerns raised during the comment period.

Comments below are grouped in the following categories:

- 1 to 10 Preferred Alternative
- 11 to 12 Risk Assessment
- 13 to 14 Cleanup Levels and Remedial Actions
- 15 to 19 Wetlands
- 20 Future Land Use
- 21 to 23 Miscellaneous

Preferred Alternative

1. **COMMENT:** One commenter wondered why EPA had proposed the Option 6 (capping and solidification) rather than Option 4 (off-site disposal) for South Tacoma Field soil?

RESPONSE: EPA's goal for a Superfund remedial action is to attempt to solve the contamination problem at the site, if practicable, rather than merely transfer the contamination

problem to another location. EPA, generally, prefers on-site remedies to those that involve off-site disposal with only a minor treatment component. The inorganic soil contamination in the STF soil (where the primary health threat is direct contact and ingestion) is particularly manageable using solidification and capping. Off-site disposal of the STF soil would have required an enormous earthmoving project, which would increase the risk of human exposure during excavation and transportation relative to the selected remedy. For these reasons, EPA determined that STF-6 (solidification on-site, with consolidation and capping), would be more appropriate than off-site disposal, STF-4.

2. **COMMENT:** The PRP Site Group commented that alternative STF-3, containment (capping) should be the preferred alternative for soils at the site. The PRP commenters thought that STF-3 would reduce risks to the same extent as the preferred alternative, that STF-3 could be quickly implemented, that the long-term effectiveness of STF-3 would be comparable to that of the preferred alternative, and that STF-3 would best meet the cost-effective criteria of the National Contingency Plan (NCP).

RESPONSE: EPA considered all of NCP criteria before making the determination that STF-6 is the preferred alternative. STF-6, the preferred alternative, includes treatment of highly contaminated soils (hot spots) which provides greater protection to public health and has better long-term effectiveness than STF-3, as it does not rely solely on maintenance of the cap over the long-term to ensure reduced risks. Cost-effectiveness is only one of the nine criteria (which also include protectiveness of human health and the environment) used to determine the final cleanup remedy. EPA has determined that STF-6 provides the best balance among those criteria. CERCLA expresses a statutory preference for treatment as an element of the remedy. STF-6, the preferred alternative meets this statutory preference. STF-3 does not.

3. **COMMENT:** The PRP Site Group commented that, if EPA determines that permanent and aggressive treatment is necessary for site soils, STF-6 is the appropriate remedy. The PRPs also expressed the belief that EPA used an appropriate mode of analysis for selecting cleanup levels.

RESPONSE: EPA acknowledges the comment.

4. **COMMENT:** The PRP Site Group commented that the preferred alternative, STF-6, would include the off-site incineration of approximately 117 cubic yards of soil containing PCBs in the Burlington Northern dismantling yard. Information in the RI/FS indicates that the maximum concentration of PCBs is 56 mg/kg detected in only one sample, which only slightly exceeds the hot spot treatment level of 50 mg/kg. The PRP Site Group suggested, in its comments, that since containment is proposed for PCB contaminated soil below 50 mg/kg, and this soil is only slightly above this level, then the soil could also be solidified and capped on-site. The PRPs believe that this approach would adequately protect human health and the environment.

RESPONSE: The commenters appear to be referencing the PCB contamination at the Pioneer Builders Supply Property, which is located in the Burlington Northern Railyard, not the Dismantling Yard. EPA's Proposed Plan would require re-sampling of this location to confirm that soils contain PCBs at or above 50 mg/kg. If re-sampling confirms concentrations above this level, then the Proposed Plan would require the excavation of the PCB contaminated soil and transportation off-site for incineration.

The Toxic Substances Control Act (TSCA) requires that soil contaminated with PCB concentrations of 50 mg/kg or greater must either be incinerated or disposed in a permitted

chemical waste landfill. TSCA PCB regulations provide for approval of alternative technologies if such technologies are demonstrated to be equivalent to incineration in ability to destroy PCBs. The solidification/stabilization treatment method selected for PCB contaminated STF soils would not achieve the same remedial results as incineration. Therefore, solidification of PCBs at or above 50 mg/kg is not acceptable to EPA. However, the selected remedy in the ROD does include the option of off-site incineration or disposal. The selected remedy provides that PCBs in STF soils may either be incinerated off-site or disposed in an off-site chemical waste landfill.

5. **COMMENT:** A commenter from the Puget Sound Air Pollution Control Agency (PSAPCA) strongly recommended that an Order of Approval to Construct be obtained from PSAPCA for any activities or control equipment that might create contaminated air emissions at the site.

RESPONSE: The selected remedy in the ROD identifies PSAPCA regulations as an applicable requirement for the soil vapor extraction and earthmoving components of the selected remedy. CERCLA Section 121(e), 42 U.S.C. §9621(e) specifically exempts any response action conducted entirely on-site from having to obtain a Federal, State or local permit, where the action is carried out in compliance with Section 121, 42 U.S.C. §9621. In general, on-site actions need only comply with the substantive aspects of ARARs, not the corresponding administrative requirements. Although permit applications and other administrative reviews and procedures are not considered ARARs, EPA expects that the parties implementing the selected remedy will consult with PSAPCA during remedial design and remedial actions to ensure that the substantive requirements of PSAPCA's regulations are met.

6. **COMMENT:** The PRP Site Group proposed in its comments that decisions regarding the specific areas (if any) for consolidation and capping of soil exceeding the cleanup standards should be deferred until the remedial design. The PRP Site Group expressed the belief that consolidation and capping are not justified because these offer no additional environmental benefit compared with in-place capping. The PRP Site Group believed that the cost of consolidation and capping would be approximately 20 percent higher than in-place capping and such cost would be disproportionate to the benefit obtained.

RESPONSE: EPA agrees with the commenters that the appropriateness of specific caps for specific areas will necessarily be influenced by long term property development plans for the site. The ROD states that a site development plan shall be used during remedial design to identify appropriate cap types depending on future land use. EPA has selected consolidation and capping of soil above the industrial cleanup levels and below the hot spot action levels in the ROD. Consolidation was selected in order to reduce the area requiring long term cap maintenance.

Benefits of the remedial action must be viewed over the long-term. EPA recognizes that immediately after placement, consolidation and capping offers little additional benefit compared with in-place capping. However, caps are subject to degradation after several years, which would re-introduce the potential for exposure to contaminated soil. Over time, the caps will need to be inspected and repaired to minimize the possibility of exposure. If the caps were constructed in a patchwork pattern, as dictated by the current distribution of surface contamination, the caps would be relatively more difficult to monitor and maintain and there would be greater likelihood for the integrity of the caps to be breached over the long-term. These are some of the reasons why EPA has determined that it would be more protective to require consolidation of contaminated surface soil into three discrete areas for capping.

7. **COMMENT:** One commenter wondered whether it would be possible for 10 or 20 acres of the site to be separated from the rest of the site and cleaned up on an accelerated schedule?

RESPONSE: If remedial actions at 10 to 20 acres of the site were undertaken prior to initiating remedial actions at the remainder of the site, this would unnecessarily complicate the effective management of the remedial action. The selected remedy involves consolidation and capping, which means that soil will be moved around on site. During this process, the excavation areas, roads, and consolidation areas must all be accessible during remedial action. Because the exact location for each of these areas will be determined during remedial design, and may be modified as remedial actions progress, it would not be practical or efficient at this time to separate out several acres of the site prior to designing and implementing the cleanup at the entire site.

8. **COMMENT:** The PRP Site Group expressed the belief that there was no need for long term monitoring because there is no threat of contamination to groundwater. The PRP Site Group appears to base its belief on that fact that there is no site-wide contaminant plume in groundwater and, with the exception of organic contamination at Pioneer Builders Supply and viscous and apparently immiscible free product at Amsted, low levels of groundwater contamination have been found on-site.

RESPONSE: EPA has determined that adequate information exists in the RI/FS to indicate that a threat of contamination to groundwater does exist. EPA considered several factors in reaching a decision to require long term groundwater monitoring. Among those factors considered was the fact that the selected remedy would leave on-site untreated soil that contains contaminants. EPA has determined that the potential exists for these contaminants to leach from the soil to the groundwater. Considering the proximity of public water supply wells to the site, EPA has determined that public health can best be protected by requiring long term groundwater monitoring in these circumstances so that there can be timely detection of contamination if such migration of contamination does occur.

9. **COMMENT:** The PRP Site Group commented that a decision to install fencing should be deferred until the remedial design phase in order to allow flexibility for future site development. The commenters also noted that existing fencing in some areas had been vandalized and breached. The commenters expressed the belief that fencing was not feasible for a large site such as the STF site and that public education and appropriate site management were preferable methods for deterring access to the site.

RESPONSE: EPA recognizes that the existing site fence has been periodically breached and that it provides an imperfect barrier to site entry. However, fencing does significantly reduce foot and vehicle access to the site. The object of installing fencing and other barriers is to reduce the likelihood that trespassers or nearby residents will disturb the soil and/or caps on-site, thereby endangering themselves or others. EPA agrees that a combination of appropriate site management and public education (as discussed in the ROD) in conjunction with existing fencing, new fencing, and physical barriers (such as jersey barriers and natural vegetative barriers) would be effective to restrict site access. It is appropriate to develop the details of such barriers during remedial design.

10. **COMMENT:** The PRP Site Group commented that EPA should allow statistical analysis to be used to determine areas for consolidation or capping. The commenters discussed the scientific soundness of statistical analysis and expressed the belief that it should be considered because a

small number of discrete sample results would not be representative of actual conditions and would result in unnecessary remediation of large areas that are below capping levels.

RESPONSE: EPA recognizes that statistical methods to guide the remedial actions may be appropriate under certain circumstances. For example, EPA might consider a statistical approach for areas the size of the RI sampling grids. EPA would not consider such an approach appropriate for areas the size of the six site areas (such as the Dismantling Yard and Airport).

If a contaminant concentration in a RI sampling grid were close to the levels at which consolidation and capping must occur, such a relationship might indicate the appropriateness of conducting additional sampling and a statistical evaluation of the new data to determine whether remedial action is required for that sampling grid. EPA, however, will not consider statistical averaging of existing RI data as an appropriate approach for establishing whether remedial action is required for groups of RI sampling grids. This is because EPA's approach to the Risk Assessment assumes human activities that could potentially lead to exposure to contaminants are likely to occur in areas approximately the size of the RI sampling grids. Averaging groups of grids could lead to leaving a grid untreated, where existing data indicates the presence of unacceptably high levels of contamination are present in that grid. EPA's framework for an acceptable statistical method will be defined in the Statement of Work for RD/RA.

Risk Assessment

11. **COMMENT:** The PRP Site Group commented that the Human Health Risk Assessment for the site indicated that site risks under an industrial scenario do not pose significant threat to human health and those areas where a threat does occur are limited to a few hot spot locations.

RESPONSE: EPA agrees with the commenters that site risks for some of the contaminants may not pose a significant risk. However, the risks identified by the commenters do not include risks of exposure to lead. Lead is a major contaminant of concern at the site. The quantity of soil contaminated with lead above the 1000 parts per million MTCA industrial cleanup level is significant (estimated to be about 654,000 cubic yards) and is distributed over a much larger area than the limited hot spot locations discussed under the industrial scenario in the Human Health Risk Assessment. Thus, lead has a significant impact on the extent of the cleanup that will be required at the site. In contaminated areas, the chemicals of concern used in the Risk Assessment to developed site risks are mostly mixed in with the lead. Therefore, capping and treatment requirements to reduce exposure to lead contamination will also reduce the risks from exposure to the other contaminants that are mixed with lead.

12. **COMMENT:** The Tacoma Environmental Commission commented that failure to consider different species of arsenic could result in an improper risk analysis.

RESPONSE: In its risk analysis, EPA has taken into consideration the different species of arsenic. EPA used total arsenic concentrations in soil as a surrogate for the concentrations of As^{+3} and As^{+5} , the common arsenic species. EPA's general approach to risk assessment, the cancer slope factor and oral reference dose for total arsenic were used. These conservative values lead to conservative risk numbers. This conservative approach was used to ensure that risks to human health from potential exposure to arsenic would not be under-estimated and that cleanup decisions would be protective of human health.

Cleanup Levels and Remedial Actions

13. **COMMENT:** The Agency for Toxic Substances and Disease Registry (ATSDR) commented that, based on the information provided in the proposed plan, the soil and ground water cleanup levels proposed for the site are protective of public health. ATSDR commented that the industrial cleanup levels for soil are appropriate as long as the future use of the site remains industrial and institutional controls and a monitoring program are used as prudent measures to ensure that future exposure to contaminants does not occur. ATSDR also commented that the cleanup to MTCA residential soil cleanup levels for the Tacoma City Light Dry Wells is also protective of public health and that unrestricted use of this site is appropriate given the conservative cleanup levels.

RESPONSE: EPA acknowledges the comment.

14. **COMMENT:** The City of Tacoma Environmental Commission commented on apparent inconsistencies in the cleanup levels and solutions proposed for the South Tacoma Field site, an industrial area, and those selected for the Thea Foss Waterway, also an industrial site. Among the differences noted by the commenter were: 1000 parts per million cleanup level for lead in soils at South Tacoma Field versus 250 parts per million at the Thea Foss uplands area; a three-foot thick clean cap for soil containment at Thea Foss Waterway versus a one-foot thick soil cap at South Tacoma Field. The commenter expressed concern that politics and economic considerations appear to be eclipsing good science as a basis for decision making.

RESPONSE: EPA shares the commenter's concern for consistent application of cleanup levels for similar sites and for similar land uses. In this case, apparent inconsistencies in the application of cleanup standards are due to factors that are unique to each site.

Cleanup levels for lead at the two sites are related to the projected uses of the land. At the South Tacoma Field site, the land has been used for industrial purposes for the past 100 years. Based on information presented in the RI/FS, EPA had determined that the entire site was zoned heavy industrial, and thus was eligible to use industrial cleanup levels, as provided under recent to MTCA. Subsequent to issuance of the Proposed Plan, information came to EPA's attention indicating that a narrow strip of the site (18 acres out of 260) along the western boundary has been zoned R-3-T, Residential-Transitional-Commercial. However, future land use of the rest of the site is projected to be industrial. Although the City of Tacoma's long term land use plan indicates that this R-3-T zoned area is intended as a buffer area and would not include residential uses, EPA has determined that the site does not meet the eligibility requirements as outlined in the recent MTCA amendments.

Considering the new information, EPA has now determined that the cleanup levels for this site should be MTCA residential cleanup levels. This change is included in the ROD, but does not alter significantly the overall cleanup for the site. This is because EPA's preferred alternative identified in the Proposed Plan included using institutional controls (e.g., deed restriction prohibiting residential uses unless further cleanup action is taken) to prevent exposure to chemicals which exceed residential cleanup levels.

At the Thea Foss uplands site (part of the Commencement Bay - Nearshore Tidelands site), the City of Tacoma has projected use of some properties in this area for residential purposes.

Based on projected residential use of some of these properties, the State Department of Ecology has set the cleanup levels for this area at the MTCA residential cleanup level for lead of 250 parts per million for lead. Because persons in residential areas would necessarily have longer periods of exposure than persons in industrial settings, cleanup levels for residential areas are necessarily more stringent than cleanup levels for industrial areas.

The differences in soil-containment measures at the two sites are related to the locations of the caps (one cap located on land, one cap under water) and to the different receptor objects of protection. The Thea Foss cap is under water. The capped area is designed to eliminate exposure to chemicals for organisms living in the waterway. A thick cap is necessary in this area since the waterway is subject to dredging and to the erosion action caused by tidal action.

The South Tacoma Field cap is on land and such dredging and erosion is not likely to occur at the STF site. At STF, the proposed cap would use either soil or asphalt as appropriate to a specific area. Soil is planned for those areas which would be used for future development. *Asphalt is planned for those areas designated for roads and parking lots (in conjunction with future development plans).* The STF cap is designed to prevent human contact with contaminated soil and will be contoured and vegetated as necessary to protect against erosion. At the STF site, other access and land use restrictions, in conjunction with regular inspections and repairs, should prevent the cap from deteriorating.

Economic considerations (i.e.; cost) is only one of nine NCP criteria that EPA uses when evaluating various cleanup alternatives for a site. The selected cleanup remedy must first be protective and comply with federal and state regulations. After these criteria is met then cost may be considered. EPA has determined that the one-foot thickness of the South Tacoma cap in conjunction with treatment and institutional controls, will protect against human exposure to contaminated soil over the long term and complies with regulations. As discussed above, each cap (that at STF and at Thea Foss) is appropriate to site-specific conditions.

Wetlands

15. **COMMENT:** The PRP Site Group commented that the existing wetlands on the site were created and contaminated by the run-on from the storm water system operated by the City of Tacoma. The PRP Site Group articulated the expectation that vigorous source control measures would be required by EPA and by the state and that all costs associated with those measures should be the responsibility of the City of Tacoma.

RESPONSE: The on-site wetland was not created by storm water as the commenters suggest. The RI indicated that most of the historical wetlands in this area were degraded and destroyed due to long-term filling activities and other land alterations. The remnant wetland and the drainage channel now are maintained primarily by the storm water discharging onto the site.

EPA will work closely with the Washington State Department of Ecology to determine: whether future source control or other actions are necessary in the wetland/drainage channel portion of the site; the appropriate regulatory program under which the actions would be carried out, and the liability of PRPs for these actions.

16. **COMMENT:** The City of Tacoma Public Works Department (City) commented that potential CERCLA requirements would be duplicative of its Clean Water Act (CWA), National Pollution Discharge (NPDES), permit requirements.

RESPONSE: EPA appreciates the City's concern to avoid duplicative environmental requirements. EPA's Superfund program works closely with other federal environmental programs such as the federal Clean Water Act (CWA) and the Resource Conservation and Recovery Act (RCRA) and with the Washington State Department of Ecology to coordinate environmental requirements and to avoid redundancy. EPA and Ecology will be working closely together over the next few months to design Superfund and Clean Water Act monitoring activities (and other requirements as necessary) that complement each other and avoid duplicative requirements.

The data collected as part of the selected remedy will be used to determine if the cleanup actions at the site are having an adverse impact the environment, and will be used to determine whether future actions are needed to cleanup the contamination in the wetland/drainage channel and the storm water discharge to the site.

17. **COMMENT:** The City also commented on several aspects of the storm water, surface water and sediment sampling conducted during the RI. The City expressed concern that methods used to calculate storm water flow rates and mass loadings of contaminants from storm water discharges to the site may have resulted in inaccurate contaminant loading results.

RESPONSE: The RI noted that the storm water flow rates and mass loadings were estimates and also noted that the methods used could over estimate actual flows and loadings. Monitoring data collected as part of the remedial action can be used to verify the accuracy of these estimates.

18. **COMMENT:** The City commented that there is no indication as to whether contaminants reported for surface water (in the RI) were total, dissolved or suspended.

RESPONSE: EPA agrees with the commenter that this portion of the RI may not be sufficiently clear. The water quality data reported in the RI, Volume 5, Surface Water Investigation Report did not clearly indicate whether samples were analyzed for were total, dissolved or suspended concentrations. The final Sampling and Analysis Plan for the site required analysis for only total concentrations of metals in water samples. EPA agrees that this information should have been made clear in this portion of the RI.

19. **COMMENT:** The City commented that the Feasibility Study does not specify what long term monitoring of surface run-on, run-off, and sediments will be required although the proposed plan indicated it will be required.

RESPONSE: Specifics of the monitoring program will be further determined during the RD/RA phase. EPA has determined that monitoring is necessary to assess the need for future cleanup action and to determine how best to mitigate potential adverse effects of potential cleanup actions. The Feasibility Study did not specify cleanup alternatives for the wetland/drainage channel since the primary source of contamination is from the off-site discharge from the two storm water outfalls. EPA determined that evaluating the need for any on-site remedial action which addresses contamination currently in the wetland/drainage channel would not be appropriate at this time since continued discharge from the outfalls would result in recontamination. First, the off-site discharge would need to be addressed.

General response actions which could be implemented to cleanup the on-site contamination (e.g., dredging, capping) could potentially result in destruction of or further degradation of the wetland. Cleanup options for the storm water and surface water (e.g., redirecting flows, creation

of a settling basin) could adversely affect the recharge of the aquifer, aquifer flow directions, and the pumping activities at the City of Tacoma production wells and at the Tacoma Landfill ground water cleanup wells, as well as potentially destroy the current wetland.

Data collected during the RI indicates that, although the surface water and sediments are contaminated and the wetland is of low quality, the wetland continues to provide a beneficial use. Storm water recharges the aquifer and is filtered by the wetlands/drainage channel prior to leaving the site via surface water runoff and infiltration to the ground water. The water that leaves the site after this filtering process is generally cleaner than the water that enters the site (except during major storm events). The wetlands/drainage channel also provides habitat for small animals and water fowl. These factors will be taken into account during the RD/RA phase to determine the specifics of the monitoring program.

Future Land Use

20. **COMMENT:** The PRP Site Group expressed support for EPA's recognition that the STF site is zoned industrial and that cleanup decisions at the site should be based on likely future uses. The PRP Site Group also stated that any restrictions limiting the site to industrial uses should be broadly defined based on existing zoning codes.

RESPONSE: This site has historically been an industrial use area and, based on the information in the RI/FS, the Proposed Plan stated that the entire site was zoned for industrial use. However, information that has come to EPA's attention subsequent to the issuance of the Proposed Plan shows that there is a narrow strip of land along the western boundary of the property that is zoned R-3-T, Residential-Commercial Transitional District. Based on this new information, EPA has determined that MTCA residential cleanup levels apply to this site since portions of the site are zoned for residential/commercial uses. This change to residential cleanup levels does not significantly affect the cleanup action at the site. The Proposed Plan included using institutional controls as the preferred action for protecting against potential exposure to contamination above residential cleanup levels should the zoning of the site change in the future. The Proposed Plan and the selected remedy in the ROD requires appropriate institutional controls to ensure that no residential uses will be allowed unless further cleanup to residential levels is undertaken.

Miscellaneous

21. **COMMENT:** The PRP Site Group commented that there is sufficient information gathered to make an appropriate cleanup decision.

RESPONSE: EPA acknowledges the comment.

22. **COMMENT:** One commenter suggested that EPA in the future test for Vanadium and Chromium contamination if it has not already been done.

RESPONSE: During the investigation of the site, EPA required testing for these two chemicals in soil and ground water. The concentrations of these metals in site soil did not exceed MTCA method B residential cleanup levels. Concentrations of these chemicals in ground water also did not exceed federal drinking water standards or MTCA method B cleanup levels. As a result, these two chemicals were not a factor in determining the nature and extent of the cleanup of the site.

23. **COMMENT:** The City raised several liability issues including its belief that the storm water drainage system discharging to the wetlands/drainage channel is a federally permitted release under a Clean Water Act NPDES permit; that the public at large is the cause of the alleged release from the storm sewers; and that the City as a governmental entity was subject to certain CERCLA exemptions for involuntary acquisition.

RESPONSE: EPA recognizes the City's interest in trying to achieve final determination of its cleanup liability under CERCLA. However, such liability issues are not appropriately addressed in the Responsiveness Summary in the Record of Decision. Liability issues under CERCLA are addressed in a different forum and may ultimately be determined judicially. The public comment period on the Proposed Plan is designed to receive comments regarding EPA's preferred alternative in order that those comments may be considered in the choice of the selected remedy before EPA issues its Record of Decision. Liability issues are not addressed in this Responsiveness Summary but may be raised in the appropriate forum (such as negotiations on a consent decree) outside of the context of remedy selection.

APPENDIX B

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ADING: 1. 0. . SITE IDENTIFICATION

SUB-HEAD: 1. 1. . Correspondence

1. 1. . - 0000001

DATE: 07/07/81 PAGES: 1

AUTHOR: Jim Jacoby/Washington Dept. of Ecology (DOE)

ADDRESSEE: Steve Meyers/Burlington Northern Railroad (BNRR)

DESCRIPTION: Letter expressing DOE's concern over dumping on BNRR's property

1. 1. . - 0000002

DATE: 08/14/81 PAGES: 1

AUTHOR: Jim Jacoby/State of Washington Dept. of Ecology

ADDRESSEE: William Dickson/Lige Dickson Co

DESCRIPTION: Letter requesting Lige Dickson Co. to obtain a permit for dumping from Tacoma Pierce County Health Dept. (TPCHD)

1. 1. . - 0000003

DATE: 08/14/81 PAGES: 2

AUTHOR: Jim Jacoby/State of Washington Dept. of Ecology

ADDRESSEE: Ed Menotti/Unknown

DESCRIPTION: Letter requesting Mr. Menotti to obtain a permit for dumping from TPCHD

1. 1. . - 0000004

DATE: 08/18/81 PAGES: 3

AUTHOR: Jim Jacoby/State of Washington Dept. of Ecology

ADDRESSEE: Steve Meyer/BNRR

DESCRIPTION: Letter documenting the meeting on July 23, 1981 at TCPHD

1. 1. . - 0000005

DATE: 08/19/81 PAGES: 1

AUTHOR: William Dickson/Lige Dickson Co.

ADDRESSEE: Jim Jacoby/State of Washington Dept. of Ecology

DESCRIPTION: Letter in response to Jacoby's 8/14/81 letter

1. 1. . - 0000006

DATE: 04/20/82 PAGES: 2

AUTHOR: Mike Alushin/EPA

ADDRESSEE: William N. Hedeman/EPA

DESCRIPTION: Action Memo for Site Investigation of S. Tacoma Swamp

SUB-HEAD: 1. 2. . Background

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1. 2. . - 0000001

DATE: 09/01/80 PAGES: 30

AUTHOR: Earth Consultants/Unknown

ADDRESSEE: General Plastics Mfg./Unknown

DESCRIPTION: Geotechnical Engineering Study, General Plastics Facility, Tacoma, Washington

1. 2. . - 0000002

DATE: 02/01/81 PAGES: 5

AUTHOR: DOE/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Commencement Bay, Tacoma, Duwamish River, Seattle, Contamination Problems and Control Summary

1. 2. . - 0000003

DATE: 01/01/82 PAGES: 23

AUTHOR: Doug Pierce, Steve Rogers/TCPHD

ADDRESSEE: Unknown/Unknown

DESCRIPTION: South Tacoma Industrial Waste Survey

1. 2. . - 0000004

DATE: 09/01/82 PAGES: 3

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: South Tacoma Swamp Investigation - Sampling Sites on Burlington Northern Property

1. 2. . - 0000005

DATE: 04/01/86 PAGES: 86

AUTHOR: Doug Pierce, Robert Seamons, Russelll Axelrod/TPCHD

ADDRESSEE: George Whitner/Tacoma Light Division

DESCRIPTION: Investigation/Characterization of the Former Burlington Northern Railyard Parcel : Final Report

1. 2. . - 0000006

DATE: 01/01/87 PAGES: 140

AUTHOR: Kennedy, Jenks, Chilton/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Remedial Investigation/Risk Assessment/Feasibility Study: Former Brass Foundry Area, South Tacoma Swamp, Tacoma, Washington V.1 Draft Report

1. 2. . - 0000007

DATE: 01/01/87 PAGES: 363

AUTHOR: Kennedy, Jenks, Chilton/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Remedial Investigation/Risk Assessment/Feasibility Study: Former Brass Foundry Area, South Tacoma Swamp, Tacoma, Washington V.2 Draft Report

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. 2. . - 0000008

DATE: 01/01/88 PAGES: 99

AUTHOR: Kennedy, Jenks, Chilton/Unknown

ADDRESSEE: TIP Management Inc./Unknown

DESCRIPTION: Site Investigation: Surface Waste Removal Report

SUB-HEAD: 1. 3. . Notification/Site Discovery/CERCLIS

1. 3. . - 0000001

DATE: 06/17/86 PAGES: 15

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: CERCLIS Maintenance Forms

SUB-HEAD: 1. 4. . Preliminary Assessment Report

1. 4. . - 0000001

DATE: 06/01/83 PAGES: 93

AUTHOR: Remedial Technologies Inc./Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Preliminary Site Investigation, So. Tacoma Swamp, Tacoma, Washington

SUB-HEAD: 1. 5. . Site Inspection/Investigation Report

1. 5. . - 0000001

DATE: 07/23/81 PAGES: 2

AUTHOR: Jim Jacoby/State of Washington Dept. of Ecology

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Inspection Report

1. 5. . - 0000002

DATE: 06/07/82 PAGES: 2

AUTHOR: Will Abercrombie/State of Washington Dept. of Ecology

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Inspection Report

1. 5. . - 0000003

DATE: 08/05/82 PAGES: 6

AUTHOR: Will Abercrombie/State of Washington Dept. of Ecology

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Inspection Report

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. 5. . - 0000004

DATE: 06/13/86 PAGES: 2

AUTHOR: Mike Gallagher/State of Washington Dept. of Ecology

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Inspection Report

1. 5. . - 0000005

DATE: 08/05/86 PAGES: 3

AUTHOR: William Carberry/Ecology & Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Atlas Foundry Dump Site Trip Report

1. 5. . - 0000006

DATE: 08/06/86 PAGES: 4

AUTHOR: William Carberry/Ecology & Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: So. Tacoma Swamp: 56th and Proctor Streets Site Trip Report

1. 5. . - 0000007

DATE: 08/06/86 PAGES: 2

AUTHOR: Debbie Flood/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Potential Hazardous Waste Site Site Identification Tacoma Swamp,
56th and S. Proctor St.

1. 5. . - 0000008

DATE: 08/06/86 PAGES: 2

AUTHOR: Debbie Flood/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Potential Hazardous Waste Site Site Identification Tacoma Swamp:
13 Acre Parcel

SUB-HEAD: 1. 6. . Sampling and Analysis Data

1. 6. . - 0000001

DATE: 08/30/85 PAGES: 94

AUTHOR: E & E/Unknown

ADDRESSEE: John Osborn/EPA

DESCRIPTION: QA Data Case #'s 4565(Organics), 2421J(SAS Inorganics),
SAS2421J(Organics), 6421(HSL Organics). 8/30/85-9/30/86

1. 6. . - 0000002

DATE: 11/04/86 PAGES: 6

AUTHOR: Nathan Graves/Kennedy, Jenks, Chilton

ADDRESSEE: Tom Anderson/Tacoma Industrial Properties

DESCRIPTION: Results of Chemical Analysis of Building Debris

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

6. . - 00000004
DATE: 05/11/87 PAGES: 48
AUTHOR: Barbara J. Trejo, Mackey Smith/Applied Geotechnology, Inc.
ADDRESSEE: Pioneer Builders Supply/Unknown
DESCRIPTION: Soil Sampling and Chemical Testing, 5401 Burlington Way, Lots 2 and 3, Tacoma, Washington

1. 6. . - 00000003
DATE: 04/21/90 PAGES: 338
AUTHOR: Theresa Brandabur/Unknown
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Record of Transmittal: S. Tacoma Field QC Data sent 4/21/90 - Copy of set of QC data transmitted to Brandabur from Nathan Graves of Kennedy, Jenks - data relates to work done by TPCHD at BNR dismantling yard

SUB-HEAD: 1. 7. . So. Tacoma Swamp 1990 REMOVAL Administrative Record

1. 7. . - 00000001
DATE: 07/26/90 PAGES: 6
AUTHOR: EPA/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Administrative Record Index for the South Tacoma Field 1990 Removal Superfund Site, Tacoma, Washington

SUB-HEAD: 1. 8. . So. Tacoma Swamp 1992 AMSTED REMOVAL Administrative

1. 8. . - 1021703
DATE: 06/16/94 PAGES: 11
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Administrative Record Index for the South Tacoma Field AMSTED Removal Superfund Site, Tacoma, Washington

1. 8. . - 1033040
DATE: 09/29/94 PAGES: 17
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Table of Contents and Removal Administrative Record Index for South Tacoma Field Superfund Site AMSTED Property- Updated as of 9/29/94

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

HEADING: 2. 0. . BNR REMEDIAL INVESTIGATION/FEASIBILITY STUDY PHASE

SUB-HEAD: 2. 1. . Correspondence [Reserved]

2. 1. . - 1021435

DATE: 09/14/87 PAGES: 5

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Norm Allworth/Remediation Technologies, Inc.

DESCRIPTION: Letter: Transmits EPA and Tetra Tech comments concerning revisions required of the work plan for a Remedial Investigation/Feasibility Study

SUB-HEAD: 2. 2. . Work Plan

2. 2. . - 0000001

DATE: 11/01/87 PAGES: 100

AUTHOR: Remediation Technologies/Unknown

ADDRESSEE: Glacier Park Co./Unknown

DESCRIPTION: RI/FS Workplan for the Glacier Park Company Site - S. Tacoma Swamp, Tacoma, Washington V.1

2. 2. . - 0000002

DATE: 11/01/87 PAGES: 238

AUTHOR: Remediation Technologies/Unknown

ADDRESSEE: Glacier Park Co./Unknown

DESCRIPTION: RI/FS Workplan for the Glacier Park Company Site - S. Tacoma Swamp, Tacoma, Washington V.2

SUB-HEAD: 2. 3. . Sampling and Analysis Plan/ QAQC Plan

2. 3. . - 0000003

DATE: 07/02/86 PAGES: 5

AUTHOR: E & E/Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Quality Assurance Project Plan

2. 3. . - 0000001

DATE: 03/03/87 PAGES: 81

AUTHOR: Remediation Technologies/Unknown

ADDRESSEE: Burlington Northern Railroad/Unknown

DESCRIPTION: Waste Sampling Plan for Surface Debris Mapping at the Burlington Northern Railroad site in S. Tacoma, Washington

2. 3. . - 0000002

DATE: 03/03/87 PAGES: 82

AUTHOR: Remediation Technologies/Unknown

ADDRESSEE: Burlington Northern Railroad/Unknown

DESCRIPTION: Quality Assurance/Quality Control Plan for the So. Tacoma Swamp RI/FS Tacoma, Washington

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

SUB-HEAD: 2. 4. . Sampling and Analysis Data/Report

2. 4. . - 0000002

DATE: / / PAGES: 51

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Miscellaneous Sampling Data from 7/27/86 through 2/4/88 (includes Chain of Custody forms)

2. 4. . - 0000001

DATE: 08/23/85 PAGES: 143

AUTHOR: E & E/Unknown

ADDRESSEE: John Osborn/EPA

DESCRIPTION: QA of Case 4565(Inorganics), 4565(Organics), 2421J(SAS Inorganics), 2421J(Organics), 6241(HSL Organics), 6770(Inorganics), 6983(Inorganics), 6983(Organics) 8/23/85-5/1/87

SUB-HEAD: 2. 5. . RI/RA/FS Reports

2. 5. . - 0000001

DATE: 05/01/87 PAGES: 277

AUTHOR: Remediation Technologies/Unknown

ADDRESSEE: Burlington Northern Railroad/Unknown

DESCRIPTION: Phase I Report Remedial Investigation of the S. Tacoma Swamp Superfund Site

SUB-HEAD: 2. 6. . Other Reports

2. 6. . - 0000002

DATE: 08/06/86 PAGES: 4

AUTHOR: William Carberry/Ecology & Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: So. Tacoma Swamp: 56th and Proctor Streets Trip Report

2. 6. . - 0000001

DATE: 04/01/87 PAGES: 28

AUTHOR: Remediation Technologies/Jack W. Berryman

ADDRESSEE: BNRR/Unknown

DESCRIPTION: Site History Burlington Northern Railroad So. Tacoma Swamp Site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

HEADING: 3. 0. . REMEDIAL INVESTIGATION/FEASIBILITY STUDY PHASE II

SUB-HEAD: 3. 1. . RI Correspondence

3. 1. . - 1021647

DATE: 05/03/90 PAGES: 5

AUTHOR: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on Draft Site Background Summary

3. 1. . - 1021648

DATE: 05/07/90 PAGES: 12

AUTHOR: Nathan A. Graves/Kennedy/Jenks/Chilton

ADDRESSEE: Ross Macfarlane/Preston Thorgrimson Shidler Gates & Ellis

DESCRIPTION: Comments regarding the Site Background Summary

3. 1. . - 1021646

DATE: 05/10/90 PAGES: 2

AUTHOR: Glynis A. Carrosino/Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on the Site Background Summary

3. 1. . - 1021650

DATE: 05/10/90 PAGES: 11

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Stan Peterson/ICF Kaiser Engineers

DESCRIPTION: Comments on Draft Site Background Summary

3. 1. . - 1021078

DATE: 10/26/90 PAGES: 28

AUTHOR: Nathan A. Graves/Kennedy/Jenks/Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter re: qualifications and resumes of project personnel

3. 1. . - 0000001

DATE: 02/12/91 PAGES: 1

AUTHOR: John Hildenbrand/Tacoma-Pierce County Health Department (TPCHD)

ADDRESSEE: Jim Davis/Pioneer Builders Supply

DESCRIPTION: Letter re: Underground Storage Tank Removal - June of 1990

3. 1. . - 0000002

DATE: 02/19/91 PAGES: 1

AUTHOR: Glynda J. Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter for Draft Wetlands Investigation Field Sampling and Analysis Plan Amendment

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. . - 00000003
DATE: 02/20/91 PAGES: 1
AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal letter of Final Geophysical Survey Plan
3. 1. . - 00000004
DATE: 03/01/91 PAGES: 2
AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter transmitting revised pages, sample labels, and Addendum to the Final Field Sampling Analysis Plan
3. 1. . - 00000005
DATE: 03/21/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy, Jenks, Chilton
DESCRIPTION: Letter noting approval of Final Wetlands Investigation Field Sampling and Analysis Plan Amendment, enclosing a rationale for existing wetlands sampling grid size
3. 1. . - 00000006
DATE: 03/21/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Bill Harris/State of Washington Dept. of Ecology
DESCRIPTION: Letter transmitting copies of final Wetlands Investigation Field Sampling and Analysis Plan Amendment, noting that wetlands sample grid rationale is being included in the Administrative Record
3. 1. . - 00000007
DATE: 04/05/91 PAGES: 1
AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter transmitting revised copies of SOPs for final QAPP
3. 1. . - 00000008
DATE: 04/05/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy, Jenks, Chilton
DESCRIPTION: Letter noting that all revisions and changes to revised SOP's and QAPP are acceptable and sampling can proceed as planned
3. 1. . - 00000009
DATE: 04/08/91 PAGES: 2
AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter confirming EPA's approval of specific sampling methods and to provide additional details related to those methods

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 1. . - 0000010

DATE: 04/11/91 PAGES: 1

AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter confirming laboratory audit schedule for Analytical Technologies and Water Management Laboratories

3. 1. . - 0000011

DATE: 04/11/91 PAGES: 2

AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: William Hein/McChord Air Force Base

DESCRIPTION: Letter requesting McChord to supply applicable meteorological data that EPA can use in air modeling and risk assessment for the S. Tacoma Field Site for study performed under Consent Order

3. 1. . - 0000012

DATE: 04/18/91 PAGES: 3

AUTHOR: Susan Roth, Glynda Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter re: Groundwater Investigation - Substitution of Background Wells

3. 1. . - 1021434

DATE: 06/05/91 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glenn Bruck/EPA

DESCRIPTION: Memo: Transmits "Groundwater Well Installation/Development Interim Deliverable" concerning eleven new monitoring wells - less attachments

3. 1. . - 1021079

DATE: 09/06/91 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks/Chilton

DESCRIPTION: Letter in response to 8/19 correspondence concerning update to project schedule, comments on reports, and draft outline for data appendices

3. 1. . - 1021268

DATE: 11/29/91 PAGES: 4

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Addressees/

DESCRIPTION: Memorandum re: Transmittal of Phase I Soils Data; review of schedule for upcoming deliverables; set date to meet with project team

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. . - 1021267
DATE: 03/02/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Peter Brooks/Dept. of Ecology
DESCRIPTION: Cover letter for copies of reports, also noting PRPs have adequately responded to comments sent
3. 1. . - 1021266
DATE: 03/19/92 PAGES: 16
AUTHOR: Glynda J. Steiner/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: Submittal of Qualifications for TRC Environmental Consultants
3. 1. . - 1021265
DATE: 04/07/92 PAGES: 3
AUTHOR: Glynda J. Steiner/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: Outstanding Deliverables and Due Dates
3. 1. . - 1021081
DATE: 07/07/92 PAGES: 2
AUTHOR: Glynda J. Steiner/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: Additional Clarification on Installation of New Monitoring Wells at Tacoma City Light Property
3. 1. . - 1021246
DATE: 07/09/92 PAGES: 5
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached Monthly Progress Report for June 1992
3. 1. . - 1021264
DATE: 07/30/92 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Addressees/
DESCRIPTION: Memo re: revised schedule of deliverables, meetings for August
3. 1. . - 1021247
DATE: 08/11/92 PAGES: 4
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached Monthly Progress Report for July 1992

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 1. . - 1021263

DATE: 09/02/92 PAGES: 1

AUTHOR: Peter Rubenstein/EPA

ADDRESSEE: Kerry Burnham/EPA

DESCRIPTION: Memo re: PTI's Future Contracting Request - Amsted Industries and the S. Tacoma Field Superfund Site

3. 1. . - 1021248

DATE: 10/12/92 PAGES: 3

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and attached Monthly Progress Report for September 1992

3. 1. . - 1021261

DATE: 11/06/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Stan Peterson/ICF Technology

DESCRIPTION: Cover letter for two copies of revised Feasibility Study schedule

3. 1. . - 1021262

DATE: 11/06/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks/Chilton

DESCRIPTION: Letter re: revised Feasibility Study Report Schedule

3. 1. . - 1021082

DATE: 04/08/93 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants

DESCRIPTION: Letter providing EPA's approval for Vol. 1-6 of the Remedial Investigation Report

SUB-HEAD: 3. 2. . Work Plans/Comments

3. 2. . - 0000003

DATE: 05/10/90 PAGES: 11

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Stan Peterson/ICF Kaiser Engineers

DESCRIPTION: Comments on changes in Site Background Summary that must be made before incorporation into work plan

3. 2. . - 0000004

DATE: 05/17/90 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Stan Peterson/ICF Kaiser

DESCRIPTION: Additional comments on RI/FS workplan

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

2. . - 0000005

DATE: 07/20/90 PAGES: 1

AUTHOR: Brad D. Harp/Tacoma-Pierce County Health Department

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on RI/FS

3. 2. . - 0000006

DATE: 07/25/90 PAGES: 3

AUTHOR: Bert Bowen/State of Washington Dept. of Ecology

ADDRESSEE: Bill Harris/State of Washington Dept. of Ecology

DESCRIPTION: Comments on Draft Work Plan for RI/FS

3. 2. . - 0000007

DATE: 07/26/90 PAGES: 5

AUTHOR: Glynis A. Carrosino/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on Draft RI/FS Workplan

3. 2. . - 0000011

DATE: 07/26/90 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Lew Consiglieri/NOAA

DESCRIPTION: Comments on Draft RI/FS Workplan

3. 2. . - 0000008

DATE: 07/27/90 PAGES: 3

AUTHOR: John Hildebrand/Tacoma-Pierce County Health Dept.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on Draft RI/FS Workplan

3. 2. . - 0000009

DATE: 07/29/90 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Earle V. Krivenac/ICF Kaiser Engineering

DESCRIPTION: Comments on Draft RI/FS Workplan

3. 2. . - 0000010

DATE: 08/01/90 PAGES: 35

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Comments on Draft RI/FS Workplan

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3. 2. . - 0000013

DATE: 08/21/90 PAGES: 5

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Nathan A. Graves/Kennedy, Jenks, Chilton

DESCRIPTION: Letter re: clarification of issues on Draft RI/FS Workplan

3. 2. . - 0000001

DATE: 09/01/90 PAGES: 100

AUTHOR: ICF Technology, Inc./Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Human Health and Ecological Risk Assessment Workplan for the So. Tacoma Field Superfund Site : Final

3. 2. . - 0000002

DATE: 09/01/90 PAGES: 246

AUTHOR: ICF Technology, Inc./Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Remedial Investigation and Feasibility Study S. Tacoma Field Tacoma, Washington Final Work Plan

3. 2. . - 1021072

DATE: 09/01/90 PAGES: 150

AUTHOR: Stan R. Peterson/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report: Final Work Plan; Remedial Investigation and Feasibility Study, South Tacoma Field, Tacoma, Washington - Revision 1

3. 2. . - 0000014

DATE: 09/10/90 PAGES: 3

AUTHOR: Nathan A. Graves/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter regarding technical issues involved in Draft RI/FS Workplan

3. 2. . - 0000015

DATE: 09/17/90 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Nathan Graves/Kennedy, Jenks, Chilton

DESCRIPTION: Letter re: RI/FS Workplan

3. 2. . - 1021260

DATE: 09/17/90 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Nathan Graves/Kennedy/Jenks/Chilton

DESCRIPTION: Cover letter re: post-negotiations final remedial investigation and feasibility study work plan.

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

2. . - 0000016
DATE: 09/24/90 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Nathan Graves/Kennedy, Jenks, Chilton
DESCRIPTION: Letter addressing EPA agreements with the PRPs concerning where efficiencies can be incorporated into the RI/FS Workplan
3. 2. . - 0000017
DATE: 09/26/90 PAGES: 3
AUTHOR: Nathan Graves/Kennedy, Jenks, Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Comments re: Revised RI/FS Workplan
3. 2. . - 0000018
DATE: 10/01/90 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Nathan Graves/Kennedy, Jenks, Chilton
DESCRIPTION: Clarifications discussed in 9/28/90 phone conversation
3. 2. . - 0000020
DATE: 01/15/91 PAGES: 2
AUTHOR: Marshall Lee and Bill Ryan/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: S. Tacoma Field Air Investigation
3. 2. . - 0000019
DATE: 01/28/91 PAGES: 9
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Modifications to RI/FS Work Plan - Air
3. 2. . - 0000012
DATE: 02/05/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: File/Unknown
DESCRIPTION: Clarification of Comments on the Draft RI/FS Workplan
- SUB-HEAD: 3. 2. 1. Groundwater/Well Water Data
3. 2. 1. - 0000004
DATE: / / PAGES: 1
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Graph showing Depth to Groundwater at CBS Wells

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 2. 1. - 0000001

DATE: 11/09/89 PAGES: 7

AUTHOR: G. S. Karavitis/Tacoma Public Utilities

ADDRESSEE: Charles E. Findley/EPA

DESCRIPTION: Cover letter and accompanying test well material

3. 2. 1. - 0000002

DATE: 01/25/90 PAGES: 2

AUTHOR: John R. Kane/SAIC

ADDRESSEE: Randall W. Rose/Black & Veatch

DESCRIPTION: Cover letter and accompanying water level measurements

3. 2. 1. - 0000003

DATE: 02/27/90 PAGES: 11

AUTHOR: Jac Davies/Washington State Dept. of Health

ADDRESSEE: Tim Larson/Tacoma Public Utilities

DESCRIPTION: Cover letter and enclosed results of VOC analyses

SUB-HEAD: 3. 3. . Oversight Work Plan for RI/FS

3. 3. . - 0000001

DATE: 03/01/91 PAGES: 74

AUTHOR: ICF Technology, Inc./Unknown

ADDRESSEE: US EPA Region X/Unknown

DESCRIPTION: Oversight Workplan for the South Tacoma Field Remedial Investigation and Feasibility Study (Revision 1)

SUB-HEAD: 3. 4. . Inspection/Investigation Reports

3. 4. . - 0000001

DATE: 10/26/89 PAGES: 43

AUTHOR: Clayton R. Patmont, Matthew G. Dalton/Hart Crowser & Associates,

ADDRESSEE: Russel Post/Tacoma Public Utilities

DESCRIPTION: Expedited Site Characterization : Tacoma Public Utilities

3. 4. . - 0000002

DATE: 04/01/90 PAGES: 32

AUTHOR: E & E/Unknown

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Screening Site Inspection Report for Lige & Wm. B. Dickson Co. Tacoma, Washington

3. 4. . - 0000003

DATE: 04/01/90 PAGES: 43

AUTHOR: E & E/Unknown

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Screening Site Inspection Report for St. Vincent de Paul/Southwest Corner Area, Tacoma, Washington

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HEAD: 3. 5. . Sampling and Analysis Plans/QAPP/Wetlands

3. 5. . - 00000004

DATE: / / PAGES: 233.

AUTHOR: Kennedy/Jenks/Chilton/Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Quality Assurance Project Plan : Appendix F : Final Report

3. 5. . - 1021259

DATE: / / PAGES: 42

AUTHOR: Unknown/Envirometrics, Inc.

ADDRESSEE: Unknown/Unknown

DESCRIPTION: South Tacoma Field Superfund Site Review of Meteorological Data

3. 5. . - 1021652

DATE: 02/22/91 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks/Chilton

DESCRIPTION: Comments on Final Field Sampling and Analysis Plan and Final Quality Assurance Project Plan

5. . - 00000001

DATE: 03/01/91 PAGES: 195

AUTHOR: Kennedy/Jenks/Chilton/Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Field Sampling and Analysis Plan

3. 5. . - 00000002

DATE: 03/01/91 PAGES: 220

AUTHOR: Kennedy/Jenks/Chilton/Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Quality Assurance Project Plan

3. 5. . - 00000003

DATE: 03/01/91 PAGES: 145

AUTHOR: Kennedy/Jenks/Chilton/Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Quality Assurance Project Plan Appendices E

3. 5. . - 1021085

DATE: 03/01/91 PAGES: 14

AUTHOR: Unknown/Kennedy/Jenks/Chilton

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Quality Assurance Project Plan South Tacoma Field Superfund Site Remedial Investigation and Feasibility Study Final Revisions Issued as Page Prints 3/1/91

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. . - 0000005
DATE: 03/19/91 PAGES: 82
AUTHOR: Kennedy/Jenks/Chilton/Unknown
ADDRESSEE: EPA/Unknown
DESCRIPTION: Wetlands Investigation Field Sampling and Analysis Plan Amendment :
Final Report
3. 5. . - 1021653
DATE: 03/20/91 PAGES: 2
AUTHOR: Glynda J. Steiner/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal letter for page prints for Final Quality Assurance
Project Plan and Additional Materials for QAPjP Appendix F
3. 5. . - 1021086
DATE: 04/23/91 PAGES: 1
AUTHOR: Julie R. Miller/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: revised schedule for laboratory audit of ATI-San Diego
3. 5. . - 1021087
DATE: 05/06/91 PAGES: 2
AUTHOR: Glynda J. Steiner/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter presenting the procedures for collecting samples from dry
wells on the Tacoma City Light property
3. 5. . - 1021088
DATE: 05/20/91 PAGES: 4
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter re: modification of the air investigation section of the
RI/FS workplan for South Tacoma Field
3. 5. . - 1021069
DATE: 06/07/91 PAGES: 31
AUTHOR: Unknown/Envirometrics, Inc.
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Report: Air Investigation Plan
3. 5. . - 1021090
DATE: 08/02/91 PAGES: 4
AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: Schedule modification for soil investigation, approval
of Silver Valley Laboratories, request for approval of modificati
of CLP digestion method, and request for assistance in obtaining
solid laboratory control sample

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

5. . - 1021091
DATE: 08/05/91 PAGES: 1
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal letter for Final Blackberry Investigation Field Sampling and Analysis Plan.
3. 5. . - 1021074
DATE: 08/07/91 PAGES: 66
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Report: Soil Gas Sampling and Analysis Plan Amendment
3. 5. . - 1021092
DATE: 08/07/91 PAGES: 1
AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal letter for Final Soil Gas Sampling and Analysis Plan Amendment
3. 5. . - 1021093
DATE: 08/08/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter approving Final Blackberry Field Sampling and Analysis Plan Amendment
3. 5. . - 1021094
DATE: 08/09/91 PAGES: 58
AUTHOR: Kevin Booth/Silver Valley Laboratories
ADDRESSEE: Julie R. Miller/Kennedy/Jenks Consultants
DESCRIPTION: Cover letter and enclosed SOP for Hexavalent Chromium
3. 5. . - 1021096
DATE: 08/13/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter approving the Final Soil Gas Sampling and Analysis Plan Amendment
3. 5. . - 1021098
DATE: 08/23/91 PAGES: 9
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter transmitting Silver Valley Laboratories SOP 27 for preparation of blackberry samples

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. . - 1021083

DATE: 08/28/91 PAGES: 9

AUTHOR: Unknown/Kennedy/Jenks/Chilton

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Field Sampling and Analysis Plan South Tacoma Field Superfund Site
Remedial Investigation and Feasibility Study Final Revisions
Issued as Page Prints 3/1/91 and 8/28/91

3. 5. . - 1021099

DATE: 08/28/91 PAGES: 4

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter submitting copies of revisions to the Final South Tacoma
Field Sampling and Analysis Plan and Summary Modifications to the
Final FSAP

3. 5. . - 1021073

DATE: 09/05/91 PAGES: 29

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Report: Blackberry Investigation Field Sampling and Analysis Plan
Amendment

3. 5. . - 1021084

DATE: 09/05/91 PAGES: 34

AUTHOR: Unknown/Kennedy/Jenks/Chilton

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Quality Assurance Project Plan South Tacoma Field Superfund Site
Remedial Investigation and Feasibility Study Final Revisions
Issued as Page Prints 3/1/91, 3/20/91 and 9/5/91

3. 5. . - 1021100

DATE: 09/05/91 PAGES: 4

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter submitting revisions to the Final South Tacoma Field Quality
Assurance Project Plan and Summary of Modifications to the Final
QAPjP

3. 5. . - 1021258

DATE: 01/09/92 PAGES: 1

AUTHOR: Julie R. Miller/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter informing of additional analytical parameters that will be
performed on the sediment samples collected during the third event
of surface water/sediment sampling

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

5. . - 1021071
DATE: 02/24/92 PAGES: 135
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Report: Phase II Soil Investigation Field Sampling and Analysis Plan Amendment
3. 5. . - 1021257
DATE: 02/24/92 PAGES: 4
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal letter of Final Phase II Soil Investigation Field Sampling and Analysis Plan Amendment
3. 5. . - 1021254
DATE: 03/18/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: South Tacoma Field File/EPA
DESCRIPTION: Memorandum re: Modifications to the Work Plan
3. 5. . - 1021075
DATE: 05/11/92 PAGES: 60
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Report: Confirmational Sampling and Analysis Plan for Subsurface Geophysical Targets
3. 5. . - 1021101
DATE: 06/09/92 PAGES: 10
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: Addendum to the Final Confirmation Sampling and Analysis Plan for Subsurface Geophysical Targets
3. 5. . - 1021102
DATE: 06/09/92 PAGES: 12
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter and transmittal of ATI's Standard Operating Procedure for Low Level Method 8080
3. 5. . - 1021253
DATE: 06/15/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Raleigh Farlow/EPA
DESCRIPTION: Memo re: ATI's Low Level PCBs SOP

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. . - 1021252

DATE: 07/02/92 PAGES: 2

AUTHOR: Thor Cutler/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo re: On-Site (6/30/92) review of test pit activities

3. 5. . - 1021250

DATE: 11/22/93 PAGES: 2

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: One Page QAPjP Addendum Form (WPO memo attached)

3. 5. . - 1021251

DATE: 11/22/93 PAGES: 1

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: One Page QAPjP Addendum Form

3. 5. . - 1021249

DATE: 02/22/94 PAGES: 16

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Sample Analysis and Quality Assurance Project Plan for Oversight of the Tacoma Fields Superfund Site

SUB-HEAD: 3. 5. 1. Comments

3. 5. 1. - 0000001

DATE: 01/14/91 PAGES: 1

AUTHOR: Glynda J. Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter for S. Tacoma Field Draft Field Sampling and Analysis Plan, and Draft Quality Assurance Project Plan for the STF Superfund Site

3. 5. 1. - 0000002

DATE: 01/25/91 PAGES: 5

AUTHOR: William W. Harris/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on K/J/C's Field Sampling and Analysis Plan and Quality Assurance Project Plan for the S. Tacoma Field Superfund Site

3. 5. 1. - 1021656

DATE: 01/25/91 PAGES: 5

AUTHOR: William W. Harris/Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on Field Sampling and Analysis Plan and Quality Assurance Project Plan

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

5. 1. - 0000003

DATE: 01/28/91 PAGES: 16

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy, Jenks, Chilton

DESCRIPTION: Transmittal of EPA comments on the Draft Field Sampling and Analysis Plan, Draft Quality Assurance Project Plan, and the Final Health and Safety Plan

3. 5. 1. - 1021658

DATE: 01/28/91 PAGES: 9

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter re: Modifications to the RI/FS Work Plan - Air

3. 5. 1. - 1021659

DATE: 01/28/91 PAGES: 16

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks/Chilton

DESCRIPTION: Transmittal of EPA comments on the Draft Field Sampling and Analysis Plan, and the Draft Quality Assurance Project Plan and the Final Health and Safety Plan

5. 1. - 1021657

DATE: 01/31/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Addendum to Comments on the Draft Sampling and Analysis Plan (comments erroneously omitted from the EPA submittal of comments to K/J/C as transmitted in correspondence of 1/28/91)

3. 5. 1. - 0000004

DATE: 02/05/91 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: File/Unknown

DESCRIPTION: Clarification of comments on Draft Sampling and Analysis Plan

3. 5. 1. - 1021654

DATE: 02/05/91 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: South Tacoma Field File/EPA

DESCRIPTION: Memo re: Clarification of Comments on Draft Sampling and Analysis Plan

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. 1. - 00000005

DATE: 02/19/91 PAGES: 2

AUTHOR: Glynda J. Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter of Final Quality Assurance Project Plan

3. 5. 1. - 00000006

DATE: 02/28/91 PAGES: 4

AUTHOR: William W. Harris/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on S. Tacoma Field Wetlands Investigation Field Sampling and Analysis Plan Amendment

3. 5. 1. - 00000007

DATE: 03/01/91 PAGES: 2

AUTHOR: Glynda Steiner/KJC

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter of revisions and addressing of specific comments re: Final Quality Assurance Project Plan

3. 5. 1. - 00000013

DATE: 03/03/91 PAGES: 1

AUTHOR: Robert Melton/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Review of Oversight QAPjP for S. Tacoma Field

3. 5. 1. - 1021655

DATE: 03/04/91 PAGES: 5

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks/Chilton

DESCRIPTION: Letter stating that overall the Draft Wetlands Investigation Field Sampling and Analysis Plan Amendment is responsive to the Administrative Order on Consent but some changes need to be made before EPA can approve (comments attached)

3. 5. 1. - 00000014

DATE: 03/07/91 PAGES: 1

AUTHOR: Robert Melton/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Review of March 1, 1991 Revisions to QAPjP for S. Tacoma Field

3. 5. 1. - 00000008

DATE: 03/08/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/KJC

DESCRIPTION: Letter noting that revisions pages for Final Field Sampling and Analysis Plan, Final Quality Assurance Project Plan, and Final Geophysical Plan are adequate, and correcting KJC's understanding re: purchase of software to process data

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. 1. - 0000009
DATE: 03/14/91 PAGES: 3
AUTHOR: Stan R. Peterson/ICF Technology, Inc.
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached Rationale for Wetlands Sampling-Grid Size
3. 5. 1. - 0000010
DATE: 03/19/91 PAGES: 3
AUTHOR: Glynda Steiner/KJC
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Clarification of Status of Quality Assurance Project Plan and Management of Samples Collected at S. Tacoma Field
3. 5. 1. - 0000011
DATE: 03/20/91 PAGES: 2
AUTHOR: Glynda Steiner/KJC
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal of Page Prints for Final Quality Assurance Project Plan and Appendices
5. 1. - 0000012
DATE: 03/21/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: File/EPA
DESCRIPTION: EPA Comments on Draft Wetlands Investigation Field Sampling and Analysis Amendment : Clarification of why certain Washington Dept. of Ecology comments were excluded
3. 5. 1. - 0000015
DATE: 04/05/91 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Review of Revisions to QAPjP for S. Tacoma Field
3. 5. 1. - 1021103
DATE: 05/06/91 PAGES: 2
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter presenting procedures for collecting samples from dry wells on the Tacoma City Light property

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. 1. - 1021089

DATE: 06/17/91 PAGES: 8

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants

DESCRIPTION: EPA concurs with revisions suggested by Kennedy/Jenks

3. 5. 1. - 1021104

DATE: 08/02/91 PAGES: 4

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter documenting verbal approval by EPA of phone conversations on 7/29/91 for requests to modify the schedule for the Soil Investigation

3. 5. 1. - 1021105

DATE: 08/13/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter approving Final Soil Gas Sampling and Analysis Plan Amendment

3. 5. 1. - 1021106

DATE: 08/15/91 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Cover letter for memorandum from Donald Matheny, EPA Chemist addressing the use of solid laboratory control samples

3. 5. 1. - 1021107

DATE: 10/03/91 PAGES: 17

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter summarizing the proposed approach to hydraulic testing at the site

3. 5. 1. - 1021108

DATE: 10/15/91 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: EPA comments on revised draft Wetland Delineation and Endangered Plan Species Survey

3. 5. 1. - 1021109

DATE: 10/30/91 PAGES: 3

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: EPA's review of Kennedy/Jenks proposal to eliminate the aquifer tests at the site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

5. 1. - 1021110
DATE: 11/18/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Chilton
DESCRIPTION: Letter stating the Addendum to the Wetland Delineation and Endangered Plant Species Survey is acceptable
3. 5. 1. - 1021111
DATE: 01/30/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultant
DESCRIPTION: Letter providing screening levels to be used in the next phase of air modeling
3. 5. 1. - 1021256
DATE: 02/27/92 PAGES: 2
AUTHOR: Laura Castrilli/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo reviewing 2/21/92 Modification to Oversight Work Plan
3. 5. 1. - 1021113
DATE: 03/03/92 PAGES: 9
AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: approach to revised aquifer testing
3. 5. 1. - 1021255
DATE: 03/17/92 PAGES: 4
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter following up matters regarding the investigations at the site
3. 5. 1. - 1021417
DATE: 06/03/92 PAGES: 3
AUTHOR: Susan R. Roth/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter documenting details of 5/28/92 conference call regarding installation of new monitoring wells at Tacoma Public Utilities
3. 5. 1. - 1021112
DATE: 06/11/92 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Response to Kennedy/Jenks correspondence on 6/3/92 re: new monitoring wells

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 5. 1. - 1021114

DATE: 06/15/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter stating that ATI's low-level PCB method appears sufficient at stated detection level

SUB-HEAD: 3. 6. . Site Safety and Health Plan

3. 6. . - 0000001

DATE: 01/14/91 PAGES: 71

AUTHOR: Kennedy/Jenks/Chilton/Unknown

ADDRESSEE: South Tacoma Field Site Group/Unknown

DESCRIPTION: Site Safety and Health Plan South Tacoma Field Superfund Site RI/FS : Final

3. 6. . - 0000002

DATE: 02/11/91 PAGES: 1

AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter noting revision of pages of Final Site Safety and Health Plan to incorporate EPA's comments

SUB-HEAD: 3. 7. . Data and Document Management Plan

3. 7. . - 0000002

DATE: 11/14/90 PAGES: 10

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Nathan Graves/Kennedy/Jenks/Chilton (KJC)

DESCRIPTION: Letter providing additional information requested by KJC at meeting on 10/31/90 re: data management

3. 7. . - 0000001

DATE: 01/25/91 PAGES: 113

AUTHOR: Kennedy/Jenks/Chilton/Unknown

ADDRESSEE: South Tacoma Field Site Group/Unknown

DESCRIPTION: Document and Data Management Plan, South Tacoma Field Superfund Site, RI/FS, Final Report

SUB-HEAD: 3. 8. . Geophysical Survey Plan

3. 8. . - 0000001

DATE: 03/06/91 PAGES: 63

AUTHOR: Engineering Hydraulics, Inc./KJC

ADDRESSEE: South Tacoma Field Site Group/Unknown

DESCRIPTION: Geophysical Survey Plan : Final Report

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8. . . - 1021238
DATE: 03/06/91 PAGES: 1
AUTHOR: Glynda Steiner/Kennedy/Jenks Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter transmitting page prints for the final Geophysical Survey Plan
3. 8. . . - 1021243
DATE: 03/11/92 PAGES: 10
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Comments on Geophysical Survey Report, Confirmational Sampling and Analysis Plan for Subsurface Geophysical Targets
3. 8. . . - 1021239
DATE: 06/09/92 PAGES: 10
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultant
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter providing additional clarification on performance of specific activities during the investigation of subsurface geophysical targets
- B-HEAD: 3. 8. 1. Comments
8. 1. - 0000001
DATE: 02/01/91 PAGES: 2
AUTHOR: William W. Harris/State of Washington Dept. of Ecology
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Comments on Draft Geophysical Survey Plan for the S. Tacoma Field Site
3. 8. 1. - 1021660
DATE: 02/05/91 PAGES: 6
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks/Chilton
DESCRIPTION: Cover letter and attached comments re: Draft Geophysical Survey Plan
3. 8. 1. - 0000002
DATE: 02/13/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: South Tacoma Field Administrative Record/Unknown
DESCRIPTION: Record of Communication re: Dept. of Ecology Comments on PRPs Draft Geophysical Survey Plan (attached ICF letter 2/6/91)

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. 8. 1. - 1021662
DATE: 02/28/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks/Chilton
DESCRIPTION: Letter re: Geophysical Survey Plan Modifications
3. 8. 1. - 1021663
DATE: 02/28/91 PAGES: 19
AUTHOR: Ty C. Schreiner/Kennedy/Jenks/Chilton
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter re: Geophysical Survey Plan Modifications
3. 8. 1. - 1021420
DATE: 07/12/91 PAGES: 7
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter re: EPA concerns over Phase I Geophysical Survey rationale
3. 8. 1. - 1021419
DATE: 07/18/91 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter re: EPA concerns about Phase II geophysical surveys
3. 8. 1. - 1021415
DATE: 08/23/91 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter stating concurrence with approach outlined in 8/16/91 letter re: Geophysical Survey
3. 8. 1. - 1021244
DATE: 03/02/92 PAGES: 3
AUTHOR: Peter C. Brooks/Dept. of Ecology
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: DOE's comments on the Confirmational Sampling and Analysis Plan for Subsurface Geophysical Targets
3. 8. 1. - 1021242
DATE: 04/10/92 PAGES: 19
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Responses to EPA Comments on Draft Confirmation Sampling and Analysis Plan for Subsurface Geophysical Targets

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

8. 1. - 1021418

DATE: 05/29/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: EPA Comments on Confirmational Sampling and Analysis Plan for Subsurface Geophysical Targets

3. 8. 1. - 1021241

DATE: 06/16/92 PAGES: 2

AUTHOR: Joan C. Shirley/EPA

ADDRESSEE: Shawn Carter/Preston Thorgrimson Shidley Gates and Ellis

DESCRIPTION: Follow up letter to telephone conference on 6/12 regarding Subsurface Geophysical Targets

SUB-HEAD: 3. 9. 1. EPA Oversight Sampling Data

3. 9. 1. - 1021115

DATE: 08/01/90 PAGES: 15

AUTHOR: Dennis Robinson/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for South Tacoma Swamp Site, Case No. 14324, SDG No. MJG291

9. 1. - 1021240

DATE: 05/17/91 PAGES: 14

AUTHOR: John Alexander/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples 91124640-91124646 (7 Soil Samples)

3. 9. 1. - 1021237

DATE: 05/23/91 PAGES: 15

AUTHOR: John Alexander/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples 91144567-91144572 (6 Soil Samples)

3. 9. 1. - 1021236

DATE: 07/10/91 PAGES: 19

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples 91174565-91174568 (4 Soil Samples) and 91174570-91174572 (3 water samples)

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3. 9. 1. - 1021235

DATE: 07/11/91 PAGES: 16

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples
91194550-91194557 (7 Soil Samples)

3. 9. 1. - 1021234

DATE: 07/12/91 PAGES: 22

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples
91224565-91224565 (10 Soil Samples)

3. 9. 1. - 1021233

DATE: 07/16/91 PAGES: 13

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples
91204483-91204486 (4 Soil Samples)

3. 9. 1. - 1021232

DATE: 07/18/91 PAGES: 67

AUTHOR: M.K. Parker/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples
91254550-91254556 (7 Soil Samples)

3. 9. 1. - 1021116

DATE: 07/23/91 PAGES: 1

AUTHOR: Laura Castrilli/EPA

ADDRESSEE: Susan McCarthy/EPA

DESCRIPTION: Letter requesting resolicitation of the Hexavalent Chromium in soil
SAS

3. 9. 1. - 1021117

DATE: 07/24/91 PAGES: 51

AUTHOR: Sripriya Carli/ICF Technology

ADDRESSEE: Stan Peterson/ICF Kaiser Engineers

DESCRIPTION: Report of Data Validation for Case 16743, SDG #MJG870, 2 Soil
Samples for Cyanide Analysis

3. 9. 1. - 1021231

DATE: 08/08/91 PAGES: 12

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metal Analysis for South Tacoma Field Soil Samples
91264595-91264598 (4 Soil Samples)

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9. 1. - 1021230
DATE: 08/15/91 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Review of Data Validation Reports for South Tacoma Fields (ICF Kaiser Engineers)
3. 9. 1. - 1021229
DATE: 08/23/91 PAGES: 9
AUTHOR: Phil Davis/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Quality Assurance data review of cyanide analysis performed on South Tacoma Field samples
3. 9. 1. - 1021227
DATE: 09/05/91 PAGES: 14
AUTHOR: Sripriya Chari/ICF Technology
ADDRESSEE: Stan Peterson/ICF Kaiser Engineers
DESCRIPTION: Report of Data Validation for Case SAS 6145J/Part C, 10 Soil Samples for Hexavalent Chromium Analysis
9. 1. - 1021228
DATE: 09/05/91 PAGES: 9
AUTHOR: Lisa Hanusiak/ICF Technology
ADDRESSEE: Stan Peterson/ICF Kaiser Engineers
DESCRIPTION: Report of Data Validation for SAS 6297-J, 2 Soil Samples for Polychlorinated Dibenzo-p-dioxin and Dibenzofuran Analyses
3. 9. 1. - 1021118
DATE: 10/21/91 PAGES: 14
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Data Validation for South Tacoma Fields, SAS No: 6564J-02; SDG No: 6564J-02-01, Metals Data
3. 9. 1. - 1021226
DATE: 11/20/91 PAGES: 4
AUTHOR: Phil Davis/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Quality assurance data review of cyanide analysis performed on South Tacoma Field Samples

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3. 9. 1. - 1021120

DATE: 11/25/91 PAGES: 13

AUTHOR: J. Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation of BNA's for the South Tacoma Field Project, Samples 91454610, 91454611 and 91454612

3. 9. 1. - 1021119

DATE: 11/29/91 PAGES: 9

AUTHOR: Linda Kempe-Karsonovich/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Review of S. Tacoma Field Water Samples for PAHs

3. 9. 1. - 1021225

DATE: 12/02/91 PAGES: 1

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Review of Data Validation Reports for South Tacoma Fields, ICF Kaiser Engineers, ARCS

3. 9. 1. - 1021224

DATE: 12/06/91 PAGES: 12

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Qualifier and Remark Codes for Manchester Environmental Laboratory Generated Data - Analysis results attached

3. 9. 1. - 1021223

DATE: 01/22/92 PAGES: 2

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Review of Data Validation Report for South Tacoma Fields Soil Sampling Phase I (12/10/91) and Second Quarter Groundwater Sampling (10/7/91) EcoChem, Inc.

3. 9. 1. - 1021121

DATE: 01/24/92 PAGES: 60

AUTHOR: Stan R. Peterson/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and enclosed response regarding data validation package for Case #16276, SDG JG698 submitted 11/4/91

3. 9. 1. - 1021222

DATE: 02/03/92 PAGES: 4

AUTHOR: Stephanie Harris/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memorandum re: sample no. 92054615, microbiology sample

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9. 1. - 1021220

DATE: 02/05/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Stan R. Peterson/ICF Technology, Inc.

DESCRIPTION: Letter stating that EPA will conduct all further validation of oversight sample data

3. 9. 1. - 1021122

DATE: 02/12/92 PAGES: 12

AUTHOR: Phil Davis/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Quality assurance data review of cyanide analysis

3. 9. 1. - 1021221

DATE: 02/12/92 PAGES: 1

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Range of Concentrations Detected for the Chemicals of Concern at S. Tacoma Field Site (mg/kg) - surface soils only

3. 9. 1. - 1021219

DATE: 03/17/92 PAGES: 7

AUTHOR: Phil Davis/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Quality Assurance data review of cyanide samples

3. 9. 1. - 1021211

DATE: 03/31/92 PAGES: 8

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: TCLP Metals Analysis for S. Tacoma Field Sample 92104556 (1 soil)

3. 9. 1. - 1021123

DATE: 04/15/92 PAGES: 28

AUTHOR: Dolores E. Montgomery/ESAT

ADDRESSEE: Gerald Muth/EPA

DESCRIPTION: Data Review of S. Tacoma Field Samples for PAHs

3. 9. 1. - 1021124

DATE: 04/21/92 PAGES: 14

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metals Analysis for South Tacoma Field Samples

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3. 9. 1. - 1021125

DATE: 05/01/92 PAGES: 11

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metals Analysis for S. Tacoma Field Samples 92114580-92114582 (3 soils)

3. 9. 1. - 1021126

DATE: 05/04/92 PAGES: 34

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for South Tacoma Fields, Case No. 17957, SDG No.'s MJJ439 and MJJ464, Cyanide Analysis

3. 9. 1. - 1021127

DATE: 05/08/92 PAGES: 58

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for South Tacoma Fields, Case No. 17877, SDG No.JJK001 , Volatile, SemiVolatile and Pesticide/PCB Analysis

3. 9. 1. - 1021128

DATE: 05/13/92 PAGES: 31

AUTHOR: Clark Carlson/ESAT

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metals Analysis for S. Tacoma Field Samples 92134390-92134410 (2 soils)

3. 9. 1. - 1021129

DATE: 05/22/92 PAGES: 64

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for S. Tacoma Fields, Case No. 17957, SDG No. JJ294, Volatile, Semi-Volatile and Pesticide/PCB Analyses

3. 9. 1. - 1021218

DATE: 12/21/92 PAGES: 36

AUTHOR: John Frerich/ICF Technology

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Cover letter and enclosed comparison of EPA Analytical Results with the PRPs Analytical Results

3. 9. 1. - 1021217

DATE: 11/29/93 PAGES: 1

AUTHOR: Laura Castrilli/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: FASP Request/Tracking Form

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9. 1. - 1017552

DATE: 01/03/94 PAGES: 5

AUTHOR: Michael G. Bray/ICF Technology Inc.

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Memo: Quality assurance review of ten soil samples analyzed for lead in support of the STF Superfund site; project code TEC-032; sample no. 93483125 thru 93483134

3. 9. 1. - 1021641

DATE: 03/30/94 PAGES: 16

AUTHOR: Isabel Chamberlain/EPA

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Cover letter stating that Self Evaluation Report prepared by the ESAT contractor was conducted in accordance with Functional Guidelines and that data qualifiers are appropriate and attached data package

SUB-HEAD: 3. 9. 2. 1 Phase I Soil Investigation Report (Data Appendix)

3. 9. 2. 1 - 1021215

DATE: 03/21/91 PAGES: 5

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: South Tacoma Field Split Samples Collected

3. 9. 2. 1 - 1021214

DATE: 11/27/91 PAGES: 2

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter stating anticipated date of receipt of Phase I Soil Investigation Report and acting as transmittal letter for other reports

3. 9. 2. 1 - 1021431

DATE: 11/27/91 PAGES: 400

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Report: Phase I Soil Investigation Report - Data Appendix

3. 9. 2. 1 - 1021213

DATE: 03/19/92 PAGES: 3

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter transmitting 3 data disks for Chemicals of Concern in surface soil

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3. 9. 2. 1 - 1021212

DATE: 03/25/92 PAGES: 45

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter transmitting database printouts for chemicals of concern in surface soil

3. 9. 2. 1 - 1021210

DATE: 04/16/92 PAGES: 28

AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and revised database printouts for chemicals of concern in surface soil

SUB-HEAD: 3. 9. 2. 2 Phase II Soil Investigation Report (Data Appendix)

3. 9. 2. 2 - 1021209

DATE: 07/13/92 PAGES: 1

AUTHOR: Thomas C. Morin/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter for submittal of Phase II Soil Investigation Data Appendix

3. 9. 2. 2 - 1021433

DATE: 07/13/92 PAGES: 300

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Report: Phase II Soil Investigation Report - Data Appendix

SUB-HEAD: 3. 9. 2. 3 Groundwater Investigation Report (Data Appendix)

3. 9. 2. 3 - 1021208

DATE: / / PAGES: 3

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Groundwater Sampling Data Analysis Table

3. 9. 2. 3 - 1021207

DATE: 10/06/89 PAGES: 7

AUTHOR: Janette Y. Black/B&V Science and Technology Corp.

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Cover letter and attached water table contour maps and water level data

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9. 2. 3 - 1021206

DATE: 08/07/91 PAGES: 2

AUTHOR: Susan J. Roth/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter for copies of Groundwater Interim Deliverable No. 1

3. 9. 2. 3 - 1021205

DATE: 10/22/91 PAGES: 3

AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter of Preliminary Groundwater Data Printouts

3. 9. 2. 3 - 1021708

DATE: 12/05/91 PAGES: 293

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Phase I Groundwater Investigation Report : Data Appendix

3. 9. 2. 3 - 1021204

DATE: 04/14/92 PAGES: 26

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo re: Contour Plots of Groundwater Chemistry at STF for April, 1991

3. 9. 2. 3 - 1021203

DATE: 09/18/92 PAGES: 60

AUTHOR: Ty C. Schreiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter re: Analytical Results for Groundwater Samples for Tacoma City Light Property and Contents of Underground Tank

SUB-HEAD: 3. 9. 2. 4 Surface Water and Sediment Investigation Report (Data

3. 9. 2. 4 - 1021202

DATE: / / PAGES: 3

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Surface Water Sampling Data Analysis Table

3. 9. 2. 4 - 1021201

DATE: 06/28/91 PAGES: 2

AUTHOR: Dana B. Grant/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter for 8 copies of Wetlands Interim Deliverable No. 1

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3. 9. 2. 4 - 1021432

DATE: 05/15/92 PAGES: 400

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Report: Surface Water and Sediment Investigation Report - Data Appendix

SUB-HEAD: 3. 9. 3. Data Validation of PRP Data

3. 9. 3. - 1021131

DATE: 07/25/91 PAGES: 8

AUTHOR: Robert G. Melton/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: QA Review of EcoChem, Inc. Data Validation Reports for South Tacoma Field

3. 9. 3. - 1021132

DATE: 07/26/91 PAGES: 7

AUTHOR: Robert G. Melton/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: QA Review of EcoChem, Inc. Data Validation Reports of Groundwater Data, 1st Quarter

3. 9. 3. - 1021133

DATE: 07/29/91 PAGES: 17

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Comment letter re: Wetlands Investigation Surface Water and Sediment, Interim Deliverable No. 1, Groundwater Investigation, Interim Deliverable No. 1 (1st Quarter)

3. 9. 3. - 1021134

DATE: 09/05/91 PAGES: 1

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Response to comments on data validation reports for South Tacoma Fields, EcoChem, Inc., August 14, 1991

3. 9. 3. - 1021200

DATE: 01/22/92 PAGES: 2

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Review of Data Validation Report for South Tacoma Fields Soil Sampling Phase I (12/10/91) and Second Quarter Groundwater Sampling (10/7/91)

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9. 3. - 1021135
DATE: 01/24/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Review of February 21, 1992, Modification to Oversight Work Plan for the South Tacoma Field Remedial Investigation and Feasibility Study (ICF, March, 1991)
3. 9. 3. - 1021199
DATE: 01/24/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter re: Review of Data Validation Reports for Surface Soils and Groundwater (rounds 1 and 2)
3. 9. 3. - 1021198
DATE: 02/27/92 PAGES: 2
AUTHOR: Laura Castrilli/EPA
ADDRESSEE: Raleigh Farlow/EPA
DESCRIPTION: Review of 2/21/92 Modification to Oversight Work Plan
3. 9. 3. - 1021136
DATE: 04/01/92 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Raleigh Farlow/EPA
DESCRIPTION: Review of Data Validation Report, South Tacoma Field Third Quarter Groundwater Sampling, EcoChem, Inc., 2/17/92
3. 9. 3. - 1021197
DATE: 04/21/92 PAGES: 4
AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Responses to Comments on the Data Validation Reports for Phase I Soil Data and Phase I Groundwater Data
- SUB-HEAD: 3. 9. 4. Chain of Custody Forms
3. 9. 4. - 1021138
DATE: / / PAGES: 109
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Field Sample Data and Chain of Custody Sheets (1991-1994)

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3. 9. 4. - 1021196

DATE: 03/08/92 PAGES: 3

AUTHOR: John P. Frerich/ICF Technology, Inc.

ADDRESSEE: Laura Castrilli/EPA

DESCRIPTION: Cover letter discussing error in attached chain of custody form

SUB-HEAD: 3. 9. 5. City of Tacoma Well Data

3. 9. 5. - 1021194

DATE: 12/21/90 PAGES: 54

AUTHOR: Unknown/Carr/Associates Inc.

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Test Well 89.7 Completion and Testing Rport Tacoma Public
Utilities Water Division

3. 9. 5. - 1021139

DATE: 07/19/93 PAGES: 166

AUTHOR: C.R. Myrick/Tacoma Public Utilities

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Cover letter and attached summary of inorganic water quality data,
and readily available VOC data

3. 9. 5. - 1021193

DATE: 08/05/93 PAGES: 14

AUTHOR: C.R. Myrick/Tacoma Public Utilities

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Cover letter and attached 13 "Summary of Water Quality Analysis"
forms dating back to 1958

SUB-HEAD: 3.10. Remedial Investigation Reports

3.10. - 1021284

DATE: 04/15/92 PAGES: 1

AUTHOR: Glynda Steiner/Kennedy/Jenks Consultant

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter for Draft Outline for Remedial Investigation Report

SUB-HEAD: 3.10. 1. RI Comments

3.10. 1. - 1021192

DATE: / / PAGES: 2

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memorandum re: Comments on Phase I Groundwater Investigation

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0. 1. - 1021666
DATE: 04/30/90 PAGES: 1
AUTHOR: Martha Anamosa/Glacier Park Company
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Comments on Draft Site Background Summary
- 3.10. 1. - 1021140
DATE: 01/08/91 PAGES: 2
AUTHOR: Mike Ruby/Envirometrics, Inc
ADDRESSEE: Glynda Steiner/Kennedy/Jenks
DESCRIPTION: Memorandum re: Response to Comments by EPA on Draft Air Investigation Preliminary Dispersion Modeling Report (11/25/91 Letter from Christine Psyk)
- 3.10. 1. - 1021661
DATE: 02/25/91 PAGES: 4
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks/Chilton
DESCRIPTION: Cover letter and attached technical concerns on the Geophysical Survey Plan Final Report
- 3.10. 1. - 1021669
DATE: 08/19/91 PAGES: 30
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Responses to EPA Comments regarding Groundwater Interim Deliverable No. 1 and Surface Water and Sediment Interim Deliverable No.1, etc.
- 3.10. 1. - 1021141
DATE: 09/06/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks/Chilton
DESCRIPTION: Letter re: update to project schedule, responses to EPA comments on the groundwater, surface water and sediment interim deliverables and data validation reports, and the draft outline for data appendices
- 3.10. 1. - 1021670
DATE: 10/15/91 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Comments on Wetland Delineation and Endangered Plan Species Survey

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.10. 1. - 1021668

DATE: 10/23/91 PAGES: 4

AUTHOR: Peter C. Brooks/Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on Preliminary Dispersion Modeling Report

3.10. 1. - 1021142

DATE: 11/25/91 PAGES: 4

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter re: EPA review of Air Investigation, Preliminary Dispersion Modeling Draft Report

3.10. 1. - 1021667

DATE: 11/26/91 PAGES: 3

AUTHOR: John Hildenbrand/Tacoma-Pierce County Health Department

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and attached comments on the Soil Gas Survey Report

3.10. 1. - 1021143

DATE: 12/11/91 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter re: general and specific comments on the Soil Gas Survey

3.10. 1. - 1021144

DATE: 01/09/92 PAGES: 3

AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and attached responses to EPA's three specific questions on technical aspects of the Draft Air Investigation Preliminary Dispersion Modeling Report

3.10. 1. - 1021189

DATE: 01/27/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter stating that Blackberry Investigation Report is acceptable as submitted

3.10. 1. - 1021190

DATE: 01/27/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Addressees/EPA

DESCRIPTION: Cover letter for attached Phase I Groundwater Investigation Draft Report, requesting comments by 2/21/92

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10. 1. - 1021188
DATE: 02/04/92 PAGES: 2
AUTHOR: John Hildebrand/Tacoma-Pierce County Health Department
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached comments on the Draft Phase I Soil Investigation Report and Phase II Soil Investigation Field Sampling and Analysis Plan
- 3.10. 1. - 1021187
DATE: 02/07/92 PAGES: 3
AUTHOR: Peter C. Brooks/Washington Dept. of Ecology
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached comments regarding the Phase I Soil Investigation Report
- 3.10. 1. - 1021186
DATE: 02/10/92 PAGES: 11
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants
DESCRIPTION: EPA Comments on the Phase I Soil Investigation Draft Report and the Phase II Soil Investigation Field Sampling and Analysis Plan Amendment, Draft
10. 1. - 1021185
DATE: 02/21/92 PAGES: 4
AUTHOR: Peter C. Brooks/Washington Dept. of Ecology
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter and attached comments on the Phase I Groundwater Investigation Report
- 3.10. 1. - 1021145
DATE: 02/27/92 PAGES: 7
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter re: EPA's and DOE's comments on the Phase I Groundwater Investigation Report
- 3.10. 1. - 1021184
DATE: 02/27/92 PAGES: 1
AUTHOR: Glenn Bruck/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Additional comment to include with groundwater comments (LAN message)

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3.10. 1. - 1021181

DATE: 03/02/92 PAGES: 2

AUTHOR: Peter C. Brooks/Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and attached comments on the Geophysical Survey Report

3.10. 1. - 1021183

DATE: 03/02/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter re: one additional comment on the groundwater investigation

3.10. 1. - 1021180

DATE: 03/09/92 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Peter C. Brooks/Washington Dept. of Ecology

DESCRIPTION: Letter re: DOE's comments on the Geophysics Survey Report

3.10. 1. - 1021178

DATE: 03/12/92 PAGES: 2

AUTHOR: Robert L. Stamnes/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memorandum re: Review of the South Tacoma Field "Supplemental Soil Characterization Report"

3.10. 1. - 1021179

DATE: 03/16/92 PAGES: 2

AUTHOR: Stan R. Peterson/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter regarding review of report prepared by PRPs on the "Chemical Analyses of Partical Size Fractions"

3.10. 1. - 1021413

DATE: 03/19/92 PAGES: 1

AUTHOR: Bill Ryan/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: LAN message stating no comments on report entitled "Chem. Analysis of Part. Size Fracs."

3.10. 1. - 1021414

DATE: 03/19/92 PAGES: 1

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Review of Draft Supplemental Soil Characterization Report, Chemical Analyses of Partical Size Fraction (2/27/92)

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10. 1. - 1021412
DATE: 03/20/92 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Cover letter and attached EPA comments on the Supplemental Soil Characterization Report, Chemical Analyses of Partical Size Fractions
- 3.10. 1. - 1021411
DATE: 03/23/92 PAGES: 7
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Anne Duffy/Washington Dept. of Public Health
DESCRIPTION: Letter re: Phase I Soil Investigation Report
- 3.10. 1. - 1021410
DATE: 04/10/92 PAGES: 9
AUTHOR: Susan J. Roth/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Responds to comments from EPA on draft Phase I Groundwater Investigation Report
- 3.10. 1. - 1021409
DATE: 04/21/92 PAGES: 2
AUTHOR: Glenn Bruck/EPA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo: Comments on issues on South Tacoma Field "Responses to Comments on Draft Phase I Ground Water Investigation Report"
- 3.10. 1. - 1021408
DATE: 04/23/92 PAGES: 10
AUTHOR: Michael DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Responds to comments on the draft Supplemental Soil Characterization Report
- 3.10. 1. - 1021146
DATE: 04/24/92 PAGES: 9
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Proposed air modeling approach for risk assessment inhalation route
- 3.10. 1. - 1021407
DATE: 05/04/92 PAGES: 4
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Responds to EPA comments on draft Phase I Soil Investigation Report

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3.10. 1. - 1021147

DATE: 06/04/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Peter Brooks/Washington State Department of Ecology

DESCRIPTION: Letter: Transmits report titled: South Tacoma Field - Draft Dispersion Model Screening Analysis - less enclosure

3.10. 1. - 1021405

DATE: 06/16/92 PAGES: 4

AUTHOR: Peter C. Brooks/Washington State Department of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Comments on the Surface Water and Sediment Investigation Report

3.10. 1. - 1021404

DATE: 06/22/92 PAGES: 9

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Transmits EPA's comments on draft Surface Water and Sediment Investigation Report

3.10. 1. - 1021148

DATE: 06/24/92 PAGES: 1

AUTHOR: Bill Ryan/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo: Comments on draft Dispersion Model Screening Analysis Report

3.10. 1. - 1021149

DATE: 06/25/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter: EPA comments on draft Dispersion Modeling Screening Analysis Report

3.10. 1. - 1033033

DATE: 07/17/92 PAGES: 3

AUTHOR: Susan Roth/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Responses to EPA Comments on Draft Phase I Groundwater Investigation Report

3.10. 1. - 1021403

DATE: 08/11/92 PAGES: 1

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo: Comments on review of Kennedy/Jenks Phase II Soil Investigation Report of July 13, 1992

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.10. 1. - 1021402

DATE: 08/25/92 PAGES: 6

AUTHOR: Dana B. De Leon/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Responds to EPA comments on the Draft Surface Water and Sediment Investigation Report

3.10. 1. - 1021401

DATE: 10/15/92 PAGES: 4

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Glenn Bruck/EPA

DESCRIPTION: Memo: Transmits draft Remedial Investigation Report and describes briefly the contents of the 6 volumes

3.10. 1. - 1021400

DATE: 12/07/92 PAGES: 8

AUTHOR: Peter C. Brooks/Washington State Department of Ecology

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Transmits comments on the draft Remedial Investigation Report

10. 1. - 1021399

DATE: 12/13/92 PAGES: 43

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Transmits comments of EPA and WDOE on Volumes 1 thru 6 of the Remedial Investigation Report

3.10. 1. - 1021398

DATE: 02/01/93 PAGES: 13

AUTHOR: John E. Norris/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Responds to EPA's comments of December 13, 1992 on the draft Remedial Investigation Report (Volumes 1 thru 6)

3.10. 1. - 1021397

DATE: 04/01/93 PAGES: 2

AUTHOR: Chris A. Poindexter/Washington State Department of Ecology

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Comments on the Remedial Investigation Report

3.10. 1. - 1021395

DATE: 04/08/93 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Transmits EPA approval for Volumes 1 thru 6 of the Remedial Investigation Report

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.10. 1. - 1021394

DATE: 07/30/93 PAGES: 1

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Chris A. Poindexter/Washington State Department of Ecology

DESCRIPTION: Letter: Transmits water quality data from the City of Tacoma's water supply wells and from the Green River - less enclosures

SUB-HEAD: 3.10. 2. Volume I - RI Summary Report

3.10. 2. - 1021441

DATE: 02/01/93 PAGES: 342

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Final Report: South Tacoma Field Remedial Investigation Report (Volume 1 of 6)

SUB-HEAD: 3.10. 3. Volume 2 - Phase I Soil Investigation Report (Appendix

3.10. 3. - 1021593

DATE: 02/27/92 PAGES: 34

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Supplemental Soil Characterization Report : Chemical Analyses of Particle Size Fractions : Draft

3.10. 3. - 1021440

DATE: 08/24/92 PAGES: 310

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Final Report: Remedial Investigation Report; Appendix SS - Phase I Soil Investigation Report (Volume 2 of 6)

3.10. 3. - 1017553

DATE: 08/10/93 PAGES: 1

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Transmits final report on additional soil sampling at Tacoma Industrial Properties - less enclosures

3.10. 3. - 1021438

DATE: 08/10/93 PAGES: 13

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Final Report: Additional Soil Sampling at Tacoma Industrial Properties

SUB-HEAD: 3.10. 4. Volume 3 - Phase II Soil Investigation Reports

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

10. 4. - 1021288
DATE: 08/24/92 PAGES: 2
AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Transmits draft Phase II Soil Investigation Report, final Groundwater Investigation Report, and draft Hydraulic Characterization Report - less enclosures
- 3.10. 4. - 1021442
DATE: 02/01/93 PAGES: 554
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Final Report: Remedial Investigation Report; Appendix SB, Phase II Soils Investigation Report
- SUB-HEAD: 3.10. 5. Volume 4 - Groundwater Investigation Report (Appendix
- 3.10. 5. - 1021443
DATE: 08/24/92 PAGES: 680
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Final Report: Remedial Investigation Report; Appendix GW - Phase I Groundwater Investigation Report and Appendix HC - Hydraulic Characterization Investigation Report (Volume 4 of 6)
- 3.10. 5. - 1021287
DATE: 01/29/93 PAGES: 1
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Transmits copies of replacement pages for the Final Remedial Investigation Appendix GW - less enclosures
- SUB-HEAD: 3.10. 6. Vol. 5 - Surface Water and Sediment Investigation Rpt.
- 3.10. 6. - 1021289
DATE: 01/28/92 PAGES: 1
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Transmits corrected page for the EPA-accepted Blackberry Investigation Report - less enclosures
- 3.10. 6. - 1021444
DATE: 08/24/92 PAGES: 516
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Remedial Investigation Report Appendices Volume 5 of 6
- SUB-HEAD: 3.10. 7. Vol. 6 - Wetland Delin..Dispersion Model...Soil Gas

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.10. 7. - 1021445

DATE: 10/29/91 PAGES: 530

AUTHOR: Unknown/LSA Associates, Inc.

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Remedial Investigation Report Appendices Volume 6 of 6 (13 pages are blueprints)

3.10. 7. - 1021671

DATE: 10/29/91 PAGES: 1

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter for 8 copies of the Final Wetland Delineation and Endangered Plant Species Survey Report revised as of 10/15/91

3.10. 7. - 1021673

DATE: 11/18/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter requesting addendum to the final Wetland Delineation and Endangered Plan Species Survey

3.10. 7. - 1021672

DATE: 11/20/91 PAGES: 1

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter for final copy of EPA approved Addendum for the Final Wetland Delineation and Endangered Plant Species Survey Report.

3.10. 7. - 1022469

DATE: 11/20/91 PAGES: 1

AUTHOR: Unknown/

ADDRESSEE: Unknown/

DESCRIPTION: Addendum to the South Tacoma Field Superfund Site Wetland Delineation and Endangered Plant Species Survey (attachment to document 3.10.7-1021672)

3.10. 7. - 1033034

DATE: 04/02/92 PAGES: 2

AUTHOR: Charles E. Sweeney/EHI

ADDRESSEE: Ty Schreiner/Kennedy/Jenks Consultants

DESCRIPTION: Response to EPA Comments on the South Tacoma Field Geophysical Survey Report

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

10. 7. - 1033032
DATE: 05/11/92 PAGES: 1
AUTHOR: Ty C. Schreiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal letter for Final Geophysical Survey Report

3.10. 7. - 1021070
DATE: 06/01/92 PAGES: 56
AUTHOR: Unknown/TRC Environmental Consultants, Inc.
ADDRESSEE: Unknown/Kennedy/Jenks Consultants, Inc.
DESCRIPTION: Draft Report: Dispersion Model Screening Analysis, STF Remedial Investigation

3.10. 7. - 1021290
DATE: 10/15/92 PAGES: 1
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Transmits replacement of Appendix DM (Volume 6 of 6) of the RI Report Remedial Investigation/Feasibility Study - less enclosures

3.10. 7. - 1021437
DATE: 04/01/93 PAGES: 56
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Draft Report: Subsurface Geophysical Target Investigation; Addendum to the STF Remedial Investigation Report

3.10. 7. - 1021588
DATE: 04/06/93 PAGES: 96
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/Burlington Northern Railroad
DESCRIPTION: Underground Storage Tank Removal Report

3.10. 7. - 1021587
DATE: 04/12/93 PAGES: 1
AUTHOR: Ty C. Schreiner/Kennedy/Jenks Consultants
ADDRESSEE: Underground Storage Tank Program/Washington Dept. of Ecology
DESCRIPTION: Cover letter for two copies of Burlington Way Tank Removal Report

3.10. 7. - 1022470
DATE: 04/19/93 PAGES: 2
AUTHOR: John Frerich/ICF Technology
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: ICF comments on the first quarterly report

SUB-HEAD: 3.11. Risk Assessment

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.11. . - 1021436

DATE: 04/01/93 PAGES: 454

AUTHOR: Unknown/ICF Technology Incorporated

ADDRESSEE: Unknown/EPA

DESCRIPTION: Final Report: Human Health Risk Assessment - Appendices A thru F - Revision 0

3.11. . - 1021628

DATE: 04/01/93 PAGES: 198

AUTHOR: Unknown/ICF Technology, Inc.

ADDRESSEE: Unknown/EPA

DESCRIPTION: Final Human Health Risk Assessment Report, South Tacoma Field Site Tacoma Washington

SUB-HEAD: 3.11. 1. Human Health

3.11. 1. - 1021392

DATE: / / PAGES: 3

AUTHOR: Unknown/State of Washington Department of Ecology

ADDRESSEE: Unknown/

DESCRIPTION: General and specific comments on the Human Health Risk Assessment Report

3.11. 1. - 1021393

DATE: / / PAGES: 3

AUTHOR: Unknown/

ADDRESSEE: Unknown/

DESCRIPTION: Draft for Discussion: General approach for evaluating potential impacts to groundwater as a result of leaching from soil

3.11. 1. - 1021391

DATE: 12/19/91 PAGES: 4

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Stan R. Peterson/ICF Technology Incorporated

DESCRIPTION: Letter: Discusses results of December 16 meeting of the STF Technical Team

3.11. 1. - 1021150

DATE: 01/21/92 PAGES: 11

AUTHOR: Anne Duffy/Washington State Department of Health

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses soil contaminants of potential health concern

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

11. 1. - 1021389
DATE: 01/24/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Marge Norman/ICF Technology, Inc.
DESCRIPTION: Letter: Discusses criteria used to select chemicals of concern for the human health risk assessment
- 3.11. 1. - - 1021390
DATE: 01/24/92 PAGES: 5
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Discusses identification of chemicals of concern for surface soils
- 3.11. 1. - 1021388
DATE: 01/27/92 PAGES: 1
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Transmits lead concentration distribution maps for use in the STF Risk Assessment - less enclosures
- 3.11. 1. - 1021387
DATE: 02/06/92 PAGES: 1
AUTHOR: Marjorie Norman/ICF Technology Incorporated
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Transmits draft of description of steps necessary for placing the STF data in a format suitable for conducting the risk assessment - less attachment
- 3.11. 1. - 1021386
DATE: 02/10/92 PAGES: 4
AUTHOR: Marjorie Norman/ICF Technology Incorporated
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Transmits table comparing chemicals of concern selected by ICF to those selected by WDOH
- 3.11. 1. - 1021384
DATE: 03/04/92 PAGES: 47
AUTHOR: Marjorie Norman/ICF Technology Incorporated
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Summarizes the process used to select chemicals of concern in surface soils and air

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.11. 1. - 1021385

DATE: 03/04/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Pat Cirone/EPA

DESCRIPTION: Memo: Outlines approach for evaluating the groundwater in the Risk Assessment

3.11. 1. - 1021383

DATE: 03/18/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: B. Feeley/EPA

DESCRIPTION: Memo: Requests inquiry into restrictions concerning installing a drinking water well

3.11. 1. - 1021382

DATE: 03/23/92 PAGES: 20

AUTHOR: Stan R. Peterson/ICF Technology Incorporated

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Identifies domestic wells within one mile of STF site

3.11. 1. - 1021381

DATE: 03/24/92 PAGES: 2

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo: Summarizes restrictions applying to installation of wells

3.11. 1. - 1021151

DATE: 04/01/92 PAGES: 42

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo: Transmits recommendations concerning the proposed "Upgradient" and "Background" wells in the Phase I Groundwater Investigation Report

3.11. 1. - 1021380

DATE: 04/07/92 PAGES: 9

AUTHOR: Kathryn E. Kelly/Environmental Toxicology International, Inc.

ADDRESSEE: Mark Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Discusses alternative approaches to the risk assessment for the STF site

3.11. 1. - 1021379

DATE: 04/09/92 PAGES: 7

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Pat Cirone/EPA

DESCRIPTION: Memo: Transmits packet of documents for review - less attachments

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

11. 1. - 1021372
DATE: 01/14/93 PAGES: 10
AUTHOR: Anne Duffy/Washington State Department of Health
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Transmits comments regarding the draft Human Health Risk Assessment Report
- 3.11. 1. - 1021368
DATE: 04/09/93 PAGES: 3
AUTHOR: John Frerich/ICF Technology Incorporated
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Transmits final issue paper addressing the general/policy concerns raised by reviewers of the Human Health Risk Assessment
- 3.11. 1. - 1021285
DATE: 05/07/93 PAGES: 1
AUTHOR: John Frerich/ICF Technology Incorporated
ADDRESSEE: Michael A. Ducharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Transmits Final Human Health Risk Assessment Report; EPA Work Assignment 59-04-OL10 - less enclosures
- 3.11. 1. - 1021369
DATE: 05/07/93 PAGES: 1
AUTHOR: John Frerich/ICF Technology Incorporated
ADDRESSEE: Michael A. Ducharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Transmits final Human Health Risk Assessment for the STF
- SUB-HEAD: 3.11. 2. Ecological Risk Assessment and Comments
- 3.11. 2. - 1021367
DATE: 10/28/92 PAGES: 1
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Charles Polityka/U. S. Dept. of Interior
DESCRIPTION: Letter: Requests DOI's review and comment on the draft Ecological Risk Assessment - less enclosure
- 3.11. 2. - 1021366
DATE: 11/02/92 PAGES: 1
AUTHOR: Beth Feeley/EPA
ADDRESSEE: John Emlen/U. S. Fish & Wildlife Service
DESCRIPTION: Letter: Transmits requested copy of Ecological Risk Assessment - less enclosure

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.11. 1. - 1021426

DATE: 10/14/92 PAGES: 1

AUTHOR: Marjorie G. Norman/ICF Technology Incorporated

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Transmits draft Human Health Risk Assessment - less enclosures

3.11. 1. - 1017554

DATE: 10/26/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Peter C. Brooks/Washington State Dept. of Ecology

DESCRIPTION: Letter: Transmits draft copies of the Human Health and Ecological Risk Assessments - less enclosures

3.11. 1. - 1021373

DATE: 10/26/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Transmits draft Human Health and Ecological Risk Assessments - less enclosures

3.11. 1. - 1021518

DATE: 10/28/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Ric Robinson/ATSDR

DESCRIPTION: Memo: Transmits draft Human Health Risk Assessment - less attachments

3.11. 1. - 1021152

DATE: 10/30/92 PAGES: 14

AUTHOR: Carol Sweeney/EPA

ADDRESSEE: Unknown/EPA

DESCRIPTION: Memo: Transmits current version of "Cheat Sheets" showing human health risk-based concentrations for soil and water

3.11. 1. - 1021371

DATE: 12/07/92 PAGES: 55

AUTHOR: Nathan A. Graves/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Transmits comments on "Human Health Risk Assessment" and "Ecological Evaluation" prepared by ENSR and Mr. Gregory L. Glass

3.11. 1. - 1021370

DATE: 12/09/92 PAGES: 4

AUTHOR: Peter C. Brooks/Washington State Department of Ecology

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Transmits comments on the Human Health Risk Assessment

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

11. 2. 1 - 1021634

DATE: 03/04/92 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark Sprenger/EPA

DESCRIPTION: Letter seeking advice on ecological risk assessment at South Tacoma Field Superfund site

SUB-HEAD: 3.12. 1. Correspondence

3.12. 1. - 1017561

DATE: / / PAGES: 1

AUTHOR: Mike DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deb Yamamoto/EPA

DESCRIPTION: Telefax: Volumes for all chemicals of concern

3.12. 1. - 1021578

DATE: 07/29/92 PAGES: 1

AUTHOR: Mark Stromberg/Burlington Northern Railroad

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter for first three sections of the Interim Draft Feasibility Study, also noting concerns that PRP Group has with EPA requiring submission of this report and others at this time

12. 1. - 1021585

DATE: 07/31/92 PAGES: 6

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Transmittal letter for Draft Treatability Study Report and Draft Technologies Evaluation and Remedial Action Objectives Sections of the Feasibility Study Report

3.12. 1. - 1021363

DATE: 08/03/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Memo: Transmits interim feasibility study reports for review - less attachments

3.12. 1. - 1021583

DATE: 08/19/92 PAGES: 3

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/Unknown

DESCRIPTION: South Tacoma Field Feasibility Study Meeting Agenda

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.12. 1. - 1021362

DATE: 08/25/92 PAGES: 2

AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Documents outstanding issues from August 19 meeting

3.12. 1. - 1021361

DATE: 08/31/92 PAGES: 4

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Follow-up to meeting of August 19 discusses conceptual approaches to site cleanup

3.12. 1. - 1021425

DATE: 09/16/92 PAGES: 2

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Disagrees with monthly progress report for August 1992

3.12. 1. - 1021360

DATE: 09/30/92 PAGES: 13

AUTHOR: Stan R. Peterson/ICF Technology Incorporated

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Transmits examples of statistical analysis of data sample

3.12. 1. - 1021359

DATE: 10/14/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Discusses upcoming meeting concerning preparation of feasibility study deliverables

3.12. 1. - 1021358

DATE: 12/04/92 PAGES: 1

AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Informs EPA of change in project managers

3.12. 1. - 1021429

DATE: 12/18/92 PAGES: 2

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Transmits draft Feasibility Study of Technical Memoranda Nos. 1 and 2 - less enclosures

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 1. - 1017557
DATE: 12/21/92 PAGES: 1
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Peter C. Brooks/Washington State Dept. of Ecology
DESCRIPTION: Letter: Requests WDOE review of FS technical memo 1 & 2
- 3.12. 1. - 1021428
DATE: 12/22/92 PAGES: 2
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Discusses revisions of the Feasibility Study schedule
- 3.12. 1. - 1021357
DATE: 01/26/93 PAGES: 2
AUTHOR: Mark W. Stromberg/Burlington Northern Railroad
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Discusses STF site schedule and concerns on effect of delays in decision making progress
- 3.12. 1. - 1021356
DATE: 03/12/93 PAGES: 5
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Accepts EPA recommendations to halt work on the STF Feasibility Study Report
- 3.12. 1. - 1017562
DATE: 03/29/93 PAGES: 2
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Discusses resolution of difficult issues related to establishing action levels for the cleanup
- 3.12. 1. - 1017559
DATE: 05/10/93 PAGES: 2
AUTHOR: Unknown/
ADDRESSEE: Unknown/
DESCRIPTION: Tables: Estimates of volumes of contaminated soil
- 3.12. 1. - 1021354
DATE: 05/10/93 PAGES: 7
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Letter: Identifies outstanding issues that will delay completion of the Feasibility Study Report

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.12. 1. - 1021355

DATE: 05/10/93 PAGES: 6

AUTHOR: Nathan Graves/Kennedy/Jenks Consultants

ADDRESSEE: Deb Yamamoto/EPA

DESCRIPTION: Fax: Transmits considerations in justifying order of magnitude differences to establish aggressive threshold

3.12. 1. - 1021353

DATE: 05/13/93 PAGES: 2

AUTHOR: Deborah Yamamoto/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Summarizes discussions of May 6 Feasibility Study meeting

3.12. 1. - 1021352

DATE: 05/18/93 PAGES: 2

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: John Frerich/ICF Technology Incorporated

DESCRIPTION: Letter: Requests technical support

3.12. 1. - 1017560

DATE: 05/21/93 PAGES: 8

AUTHOR: John Frerich/ICF Technology Incorporated

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Transmits capping cost estimates

3.12. 1. - 1021350

DATE: 06/07/93 PAGES: 10

AUTHOR: Deborah Yamamoto/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Transmits tables containing cleanup/action levels used in development of feasibility study

3.12. 1. - 1021348

DATE: 07/30/93 PAGES: 1

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Chris A. Poindexter/Washington State Department of Ecology

DESCRIPTION: Letter: Transmits water quality data from the City of Tacoma's water supply and the Green River - less enclosures

3.12. 1. - 1021347

DATE: 08/02/93 PAGES: 1

AUTHOR: Theresa M. Wood/Kennedy/Jenks Consultants

ADDRESSEE: L. W. Shatz/General Plastics

DESCRIPTION: Letter of Transmittal: Transmits STF RI reports volumes 2 and 3 - less enclosures

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 1. - 1021422
DATE: 08/12/93 PAGES: 2
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Chris A. Poindexter/Washington State Department of Ecology
DESCRIPTION: Letter: Transmits additional inorganics data on the City of Tacoma water supply - less enclosures
- 3.12. 1. - 1017558
DATE: 05/25/94 PAGES: 3
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Letter: Presents the remedial time frames for Alternative STF-6
- 3.12. 1. - 1022471
DATE: 07/27/94 PAGES: 2
AUTHOR: Deborah Yamamoto/EPA
ADDRESSEE: James Coker/City of Tacoma
DESCRIPTION: Letter regarding zoning information on the South Tacoma Field Superfund site and attached map showing general property boundaries of the site
- 3.12. 1. - 1021977
DATE: 08/11/94 PAGES: 6
AUTHOR: Richard C. Guglomo/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Cover letter and attached Record of Survey Drawings
- 3.12. 1. - 1022472
DATE: 08/24/94 PAGES: 17
AUTHOR: James Coker/City of Tacoma
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Response to an EPA inquiry regarding zoning and attached zoning maps - a permitted use pamphlet and a copy of the South Tacoma Neighborhood Plan pertaining to the zoning boundaries between the 'R-3-T' and 'M-2' zoning districts is attached
- 3.12. 1. - 1022473
DATE: 09/16/94 PAGES: 1
AUTHOR: Unknown/
ADDRESSEE: Unknown/
DESCRIPTION: South Tacoma Field Alternative 6A (Case VIIA) Offsite Incineration and Aboveground Solidification/Consolidation and Containment/Institutional Controls

SUB-HEAD: 3.12. 2. Feasibility Study Comments

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.12. 2. - 1021579

DATE: 08/21/92 PAGES: 2

AUTHOR: Ali D. Abbasi/EPA

ADDRESSEE: Paul A. Boys/EPA

DESCRIPTION: Memo re: Review of the Feasibility Study and the Treatability Study Reports, South Tacoma Field

3.12. 2. - 1021582

DATE: 08/25/92 PAGES: 2

AUTHOR: Stan R. Peterson/ICF Technology Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and attached comments regarding the Feasibility and Treatability Study Reports

3.12. 2. - 1021581

DATE: 08/26/92 PAGES: 3

AUTHOR: Peter C. Brooks/Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and attached comments on the Treatability Study Report and the Feasibility Study Report (Sections 1, 2, & 3)

3.12. 2. - 1021580

DATE: 08/27/92 PAGES: 1

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo re: Review RI/FS Treatability Study Report, South Tacoma Field Superfund Site, Kennedy/Jenks Consultants, July 31, 1992

3.12. 2. - 1021342

DATE: 09/01/92 PAGES: 8

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynda Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Responds to proposal to use a 95% upper confidence limit of the mean chemical concentrations for each sampling unit

3.12. 2. - 1022479

DATE: 09/14/92 PAGES: 43

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Mark Stromberg/Burlington Northern Railroad

DESCRIPTION: Follow up letter to a dispute resolution meeting held 09/10/92 with attachments related to practicability analysis

3.12. 2. - 1021340

DATE: 01/08/93 PAGES: 3

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Discusses unacceptability of Feasibility Study Technical Memoranda 1 and 2

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 2. - 1021154
DATE: 04/05/93 PAGES: 5
AUTHOR: Chris A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: WDOE comments on STF Feasibility Study
- 3.12. 2. - 1021339
DATE: 04/08/93 PAGES: 18
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Transmits EPA comments on Feasibility Study Technical Memoranda 1 and 2 and Section 5.0
- 3.12. 2. - 1022475
DATE: 04/12/93 PAGES: 3
AUTHOR: Michael DuCharme/Kennedy/Jenks
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter regarding resolution of threshold concentrations for Feasibility Study
- 3.12. 2. - 1021421
DATE: 12/13/93 PAGES: 2
AUTHOR: Marian Abbett/Washington State Department of Ecology
ADDRESSEE: Deb Yamamoto/EPA
DESCRIPTION: Fax: Transmits suggested wording
- 3.12. 2. - 1021338
DATE: 12/17/93 PAGES: 21
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Michael DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Transmits EPA comments on the draft Feasibility Study
- 3.12. 2. - 1021337
DATE: 01/06/94 PAGES: 3
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/EPA
DESCRIPTION: Fax: Transmits summary table of comments/questions/concerns
- 3.12. 2. - 1021336
DATE: 03/21/94 PAGES: 2
AUTHOR: Robert L. Stamnes/EPA
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Memo: Focused review of the groundwater cleanup alternative for the Pioneer Builders Supply portion of the Tacoma field site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.12. 2. - 1021335

DATE: 03/31/94 PAGES: 18

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Transmits comments of EPA and WDOE on interim final Feasibility Study

3.12. 2. - 1021640

DATE: 05/13/94 PAGES: 5

AUTHOR: Colin Wagoner/ICF Technology

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: ICF review of Final Feasibility Study report for South Tacoma Field

3.12. 2. - 1021677

DATE: 06/13/94 PAGES: 4

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter approving the FS

3.12. 2. - 1021678

DATE: 06/13/94 PAGES: 4

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Marian Abbett/Washington Dept. of Ecology

DESCRIPTION: Letter stating that overall EPA and DOE comments on the final FS were addressed, several DOE comments were not addressed and EPA will respond to DOE on these comments, comments attached

3.12. 2. - 1022474

DATE: 06/24/94 PAGES: 1

AUTHOR: Marian Abbett/Department of Ecology

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Letter regarding Department of Ecology's review of the Final Feasibility Study and Technical Memorandums 1 and 2

SUB-HEAD: 3.12. 3. Feasibility Study Interim Deliverables

3.12. 3. - 1021590

DATE: 07/31/92 PAGES: 127

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Feasibility Study (Sections 1.0, 2.0, and 3.0) Draft

3.12. 3. - 1021334

DATE: 01/29/93 PAGES: 2

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Transmits draft Feasibility Study section 5.0 - less enclosures

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 3. - 1021589
DATE: 01/29/93 PAGES: 144
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Feasibility Study Report : Section 5.0 Description and Screening
of Remedial Alternatives : Draft

SUB-HEAD: 3.12. 4. Draft Feasibility Study Reports

3.12. 4. - 1021600
DATE: 10/29/93 PAGES: 333
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Feasibility Study Report : Draft

SUB-HEAD: 3.12. 5. Treatability Study - Feasibility Study Addendum

3.12. 5. - 1021592
DATE: 07/31/92 PAGES: 34
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Treatability Study Report : Draft

3.12. 5. - 1021424
DATE: 01/24/93 PAGES: 2
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Discusses additional data collection for Feasibility Study;
solidification and particle size separation

3.12. 5. - 1021595
DATE: 02/16/93 PAGES: 36
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Work Plan for Additional Data Collection FS Addendum : Final

3.12. 5. - 1021341
DATE: 03/16/93 PAGES: 1
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Discusses additional data collection for Feasibility Study

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

- 3.12. 5. - 1021286
DATE: 03/30/93 PAGES: 1
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Transmits Treatability Study work plan - less enclosures
- 3.12. 5. - 1021594
DATE: 08/11/93 PAGES: 22
AUTHOR: Thomas C. Morin/Kennedy/Jenks Consultants
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter summarizing findings of recent additional data collection performed in support of South Tacoma Field Feasibility Study
- 3.12. 5. - 1017563
DATE: 10/19/93 PAGES: 4
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Discusses additional data collection
- 3.12. 5. - 1021323
DATE: 10/19/93 PAGES: 4
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Transmits EPA's comments on the Feasibility Study additional data collection work plan
- 3.12. 5. - 1021332
DATE: 12/02/93 PAGES: 2
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Letter: Responds to EPA's comments on the Feasibility Study Addendum, Additional Data Collection (Addendum) of October 19, 1993
- 3.12. 5. - 1021439
DATE: 02/15/94 PAGES: 123
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Report: Additional Data Collection, FS Addendum, Soil Washing and Solidification Results
- 3.12. 5. - 1021331
DATE: 02/28/94 PAGES: 1
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: John P. Frerich/ICF Technology Inc.
DESCRIPTION: Letter: Transmits report entitled "Additional Data Collection, FS Addendum, Soil Washing and Solidification Results" - less enclosures

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

SUB-HEAD: 3.12. 6. Interim Final Feasibility Study Reports

3.12. 6. - 1021599

DATE: 02/28/94 PAGES: 448

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Feasibility Study Report : Interim Final Report

SUB-HEAD: 3.12. 7. Final Feasibility Study Report

3.12. 7. - 1021601

DATE: 04/28/94 PAGES: 492

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Feasibility Study Report : Final

SUB-HEAD: 3.12. 8. Groundwater Study - Feasibility Study Addendum

3.12. 8. - 1021312

DATE: / / PAGES: 6

AUTHOR: Unknown/

ADDRESSEE: Unknown/

DESCRIPTION: Excerpt from manual: Exhibit 8.5-2; Pressure-Vacuum Lysimeter Installation

3.12. 8. - 1021330

DATE: 07/26/93 PAGES: 2

AUTHOR: Mark W. Stromberg/Burlington Northern Railroad

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Discusses need for lysimeter testing for lead to ground water

3.12. 8. - 1021329

DATE: 08/04/93 PAGES: 6

AUTHOR: Mike DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Fax: Discusses reservations about capabilities and reliability of lysimeters

3.12. 8. - 1021155

DATE: 08/05/93 PAGES: 5

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Responds to PRP Group's opposition to EPA's proposed lysimeter testing

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.12. 8. - 1021328

DATE: 08/18/93 PAGES: 4

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Chris A. Poindexter/Washington State Department of Ecology

DESCRIPTION: Letter: Discusses need for consensus from agencies regarding collection of additional data

3.12. 8. - 1021327

DATE: 08/25/93 PAGES: 3

AUTHOR: Chris A. Poindexter/Washington State Department of Ecology

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Letter: Discusses recommendations for additional data needs

3.12. 8. - 1021345

DATE: 09/10/93 PAGES: 11

AUTHOR: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Responds to issues raised by WDOE concerning collection of additional data before remedial decisions can be made

3.12. 8. - 1021326

DATE: 09/30/93 PAGES: 2

AUTHOR: Charles San Juan/Washington State Department of Ecology

ADDRESSEE: Marian/Washington State Department of Ecology

DESCRIPTION: Memo: Addresses items in toxics cleanup program [Last name of author was added by site manager]

3.12. 8. - 1021325

DATE: 10/04/93 PAGES: 97

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Transmits decision on type and quantity of additional data which must be collected - less enclosures

3.12. 8. - 1021324

DATE: 10/14/93 PAGES: 3

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Discusses preparation and proposed schedule of work plan for additional data collection

3.12. 8. - 1021343

DATE: 10/19/93 PAGES: 2

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Chris Poindexter/Washington State Department of Ecology

DESCRIPTION: Letter: Responds to request for three weeks to review the work plan for additional data collection

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 8. - 1021077
DATE: 10/25/93 PAGES: 100
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Draft Report: Technical Work Plan for Additional Data Collection at the STF Site in Support of the Feasibility Study
- 3.12. 8. - 1021156
DATE: 10/25/93 PAGES: 3
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Outlines additional work the PRP Group has agreed to conduct
- 3.12. 8. - 1021322
DATE: 10/26/93 PAGES: 1
AUTHOR: Chris A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Letter: Discusses delay in assembling response to concerns in the work plan
- 3.12. 8. - 1021320
DATE: 10/28/93 PAGES: 1
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Memo: Comments on review of technical work plan for additional data collection
- 3.12. 8. - 1021321
DATE: 10/28/93 PAGES: 2
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Comments on technical concerns associated with installing two wells in one bore hole
- 3.12. 8. - 1021318
DATE: 11/05/93 PAGES: 4
AUTHOR: Chris A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Letter: Comments on the supplemental work plan
- 3.12. 8. - 1021319
DATE: 11/05/93 PAGES: 4
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Michael A. DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Transmits EPA's supplemental comments on the technical work plan for additional data collection

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.12. 8. - 1021317

DATE: 11/22/93 PAGES: 1

AUTHOR: Don Matheny/EPA

ADDRESSEE: D. Yamamoto/EPA

DESCRIPTION: Memo: Discusses setting up column conditions for the leach test

3.12. 8. - 1021316

DATE: 12/15/93 PAGES: 4

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Discusses selection of surface soil samples for additional analysis based on analytical results

3.12. 8. - 1021315

DATE: 01/05/94 PAGES: 1

AUTHOR: Susan J. Roth/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Discusses preliminary results of column leaching tests of surface soil

3.12. 8. - 1021314

DATE: 01/06/94 PAGES: 5

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Transmits results of groundwater samples collected in November 1993

3.12. 8. - 1021313

DATE: 01/18/94 PAGES: 1

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Memo: Discusses reasoning for not drilling a new set of wells

3.12. 8. - 1021596

DATE: 01/31/94 PAGES: 89

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/South Tacoma Field Site Group

DESCRIPTION: Technical Memorandum #1 for Additional Data Collection at the STF Site in Support of the Feasibility Study : Draft

3.12. 8. - 1021157

DATE: 02/18/94 PAGES: 1

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: Michael DuCharme/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Informs PRP Group of decision to not install four additional ground water monitoring wells

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 8. - 1021158
DATE: 02/23/94 PAGES: 5
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Michael DuCharme/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Comments on Technical Memorandum #1 for additional data collection in support of the Feasibility Study
- 3.12. 8. - 1021076
DATE: 04/15/94 PAGES: 147
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/South Tacoma Field Site Group
DESCRIPTION: Draft Report: Technical Memorandum #2 for Additional Data Collection at the STF Site in Support of the Feasibility Study
- 3.12. 8. - 1017564
DATE: 05/10/94 PAGES: 2
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Memo: Discusses review of technical memorandum #2
- 3.12. 8. - 1017565
DATE: 06/01/94 PAGES: 48
AUTHOR: Susan J. Roth/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Letter: Transmits results of second round of groundwater monitoring
- 3.12. 8. - 1022476
DATE: 06/01/94 PAGES: 48
AUTHOR: Susan Roth/Kennedy/Jenks
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Letter presenting the results of groundwater monitoring in recently constructed wells at the South Tacoma Field site
- 3.12. 8. - 1021674
DATE: 06/08/94 PAGES: 1
AUTHOR: Glenn Bruck/EPA
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Review of Tech. Memo. No. 2, Additional data collection at the STF site in support of the feasibility study

SUB-HEAD: 3.12. 9. Cost Benefit Analyses

- 3.12. 9. - 1021216
DATE: / / PAGES: 13
AUTHOR: Nick Hanley/University of Stirling, Scotland
ADDRESSEE: Unknown/
DESCRIPTION: Book: Cost-Benefit Analysis and the Environment

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

- 3.12. 9. - 1021311
DATE: 05/28/92 PAGES: 3
AUTHOR: Beth C. Doan/Landau Associates, Inc.
ADDRESSEE: Unknown/
DESCRIPTION: Paper: Developing Cost-Effective Cleanup Solutions Under MTCA
- 3.12. 9. - 1021310
DATE: 07/01/93 PAGES: 6
AUTHOR: C. A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Fax: Transmits background material - charts and diagrams
- 3.12. 9. - 1017567
DATE: 09/09/93 PAGES: 3
AUTHOR: Lynn Coleman/Washington State Dept of Ecology
ADDRESSEE: Unknown/Washington State Dept of Ecology
DESCRIPTION: Memo: Draft outline concerning guidance for determination of "substantial and disproportionate"
- 3.12. 9. - 1021309
DATE: 10/01/93 PAGES: 13
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Letter of Transmittal: Transmits Technical Memorandum dated September 29, 1993
- 3.12. 9. - 1021305
DATE: 11/18/93 PAGES: 29
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: John Frerich/ICF Technology, Inc.
DESCRIPTION: Letter: Transmits cost/benefit analyses of other projects for comparison with the cost/benefit analysis of STF
- 3.12. 9. - 1021304
DATE: 11/19/93 PAGES: 15
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Elliot Rosenberg/EPA
DESCRIPTION: Memo: Transmits cost/benefit analyses of other projects for comparison with the cost/benefit analysis of STF
- 3.12. 9. - 1021308
DATE: 12/16/93 PAGES: 5
AUTHOR: John Frerich/ICF Technology Incorporated
ADDRESSEE: Joan Shirley/EPA
DESCRIPTION: Letter: Discusses comparison of approaches for cost-benefit analysis

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

2. 9. - 1021642
DATE: 03/16/94 PAGES: 4
AUTHOR: Eliot Rosenberg/EPA
ADDRESSEE: Joan Shirley/EPA
DESCRIPTION: Memo re: Review and Comparison of Cost/Benefit Analyses Used at Superfund Sites

3.12. 9. - 1021649
DATE: 06/06/94 PAGES: 1
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: File/EPA
DESCRIPTION: Correction to Rosenberg Memo dated 3/17/94

SUB-HEAD: 3.13. . State ARAR Determination/MTCA Cleanup Levels

3.13. . - 1021430
DATE: / / PAGES: 2
AUTHOR: Unknown/Washington State Department of Ecology
ADDRESSEE: Unknown/
DESCRIPTION: Ecology Quarterly Progress Report

3.13. . - 1021629
DATE: 08/20/91 PAGES: 7
AUTHOR: Thomas Eaton/Washington Dept. of Ecology
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Interprogram Policy : Area of Contamination (Eaton is first legible signature)

3.13. . - 1021159
DATE: 05/12/92 PAGES: 12
AUTHOR: Peter C. Brooks/Washington State Department of Ecology
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Discusses Cleanup Scenario

3.13. . - 1021303
DATE: 05/21/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Discusses Cleanup Scenario - less enclosure

3.13. . - 1021302
DATE: 06/09/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants
DESCRIPTION: Letter: Discusses preliminary identification of Washington State ARARS - less enclosure

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.13. . - 1021301

DATE: 08/04/92 PAGES: 3

AUTHOR: Peter C. Brooks/Washington State Department of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses review of preliminary remediation goals and submits PRG tables

3.13. . - 1021300

DATE: 08/18/92 PAGES: 9

AUTHOR: Peter C. Brooks/Washington State Department of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Transmits additional comments on MTCA cleanup levels

3.13. . - 1021299

DATE: 08/25/92 PAGES: 2

AUTHOR: Glynda Steiner/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Documents several outstanding issues raised at August 19 meeting

3.13. . - 1021298

DATE: 09/16/92 PAGES: 2

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Glynda J. Steiner/Kennedy/Jenks Consultants

DESCRIPTION: Letter: Disagrees with statement in August 1992 progress report concerning preparation of required deliverables

3.13. . - 1021630

DATE: 02/19/93 PAGES: 2

AUTHOR: Tom Eaton/Washington Dept. of Ecology

ADDRESSEE: All Hazardous Waste Staff/Washington Dept. of Ecology

DESCRIPTION: Memo re: Contained-in Policy

3.13. . - 1021632

DATE: 03/10/93 PAGES: 2

AUTHOR: Lynn Coleman/Washington Dept. of Ecology

ADDRESSEE: TCP/Unknown

DESCRIPTION: Memo re: Cleanup Standards vs. Selection of Remedy (addressed to TCP/EPA staff)

3.13. . - 1021297

DATE: 03/15/93 PAGES: 4

AUTHOR: Carol Kraege/Washington State Department of Ecology

ADDRESSEE: Unknown/Washington State Department of Ecology

DESCRIPTION: Implementation Memo No. 1: Guidance on the Use of MCLs as Cleanup Levels

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

13. . - 1021296
DATE: 04/01/93 PAGES: 2
AUTHOR: Chris A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Discusses leachability data and cleanup standards
- 3.13. . - 1021295
DATE: 05/14/93 PAGES: 8
AUTHOR: Chris A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Letter: Discusses WDOE concerns on volume estimates, leachability, data preservation, schedule, feasibility study
- 3.13. . - 1021633
DATE: 05/14/93 PAGES: 6
AUTHOR: Lynn Coleman/Washington Dept. of Ecology
ADDRESSEE: NWRO Staff/Unknown
DESCRIPTION: Memo re: Cleanup Standards versus Selection of Remedy
- 3.13. . - 1017571
DATE: 05/19/93 PAGES: 11
AUTHOR: D. Yamamoto/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Draft letter: Proposes alternative to ranges of cleanup levels
- 3.13. . - 1021294
DATE: 06/09/93 PAGES: 2
AUTHOR: Chris A. Poindexter/Washington State Department of Ecology
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Letter: Discusses cleanup ranges to be utilized in completing the feasibility study
- 3.13. . - 1021631
DATE: 09/13/93 PAGES: 2
AUTHOR: Carol Kraege/Washington Dept. of Ecology
ADDRESSEE: Tod Gold/EPA
DESCRIPTION: Response to Gold's letter asking for Ecology's opinion on statutory restrictions and ARARs
- 3.13. . - 1021293
DATE: 09/29/93 PAGES: 15
AUTHOR: Cestjon McFarland/Preston Thorgrimson Shidler Gates & Ellis
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Letter: Transmits memo concerning limitations on the use of MTCA regulatory provisions as ARARs

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.13. . - 1017569

DATE: 01/24/94 PAGES: 1

AUTHOR: Carol Fleskes/Washington State Dept of Ecology

ADDRESSEE: Unknown/Washington State Dept of Ecology

DESCRIPTION: Memo: Discusses Method B regarding TPH cleanup levels

3.13. . - 1017570

DATE: 03/30/94 PAGES: 1

AUTHOR: Unknown/

ADDRESSEE: Unknown/

DESCRIPTION: Handwritten note: Discusses manganese issues

3.13. . - 1017568

DATE: 05/01/94 PAGES: 3

AUTHOR: Unknown/Washington State Dept of Ecology

ADDRESSEE: Unknown/

DESCRIPTION: Newsletter: FOCUS - Total Petroleum Hydrocarbon (TPH) Cleanup

SUB-HEAD: 3.14. 1. Clover/Chambers Creek Geohydrologic Study For TPCHD

3.14. 1. - 1021160

DATE: 07/01/85 PAGES: 343

AUTHOR: Unknown/Remediation Technologies Inc.

ADDRESSEE: R. M. Nicola/Tacoma-Pierce County Health Department

DESCRIPTION: Final Report: Clover/Chambers Geohydrologic Study

SUB-HEAD: 3.14. 2. Expedited Site Characterization of Tacoma Public

3.14. 2. - 1021161

DATE: 10/26/89 PAGES: 43

AUTHOR: Clayton R. Patmont/Hart Crowser, Inc.

ADDRESSEE: Russell Post/Tacoma Public Utilities

DESCRIPTION: Report: Expedited site characterization study of Tacoma Public Utilities property located within the boundaries of the South Tacoma Swamp Superfund site

SUB-HEAD: 3.14. 3. St. Vincent De Paul, Lige Dickson Co. Inspection

3.14. 3. - 1021272

DATE: / / PAGES: 37

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Robert Kiehl/Unknown

DESCRIPTION: Letter: Transmits results of property inspection

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

14. 3. - 1021275
DATE: / / PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Robert Kiehl/Unknown
DESCRIPTION: Letter: Reports results of property inspection - less enclosure
- 3.14. 3. - 1021273
DATE: 01/08/90 PAGES: 31
AUTHOR: Gerald Lee/Ecology & Environment, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Report: Screening Site Inspection Report, Lige & Wm. B. Dickson Company, Tacoma, Washington
- 3.14. 3. - 1021279
DATE: 03/14/90 PAGES: 1
AUTHOR: K. C./Ecology & Environment, Inc.
ADDRESSEE: Unknown/
DESCRIPTION: Diagram of blocks 7, 8 & 9, southwest corner property boundaries, Tacoma, Washington
- 3.14. 3. - 1021280
DATE: 03/19/90 PAGES: 1
AUTHOR: K. C./Ecology & Environment, Inc.
ADDRESSEE: Unknown/
DESCRIPTION: Map overlay of southwest corner area, Tacoma, Washington
- 3.14. 3. - 1021274
DATE: 03/23/90 PAGES: 34
AUTHOR: Unknown/Ecology & Environment, Inc.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Report: Screening Site Inspection Report for Lige & Wm. B. Dickson Company, Tacoma, Washington
- 3.14. 3. - 1021282
DATE: 03/23/90 PAGES: 1
AUTHOR: Lazar Gorelik/Ecology & Environment, Inc.
ADDRESSEE: John Osborn/EPA
DESCRIPTION: Memo: Transmits St. Vincent de Paul/Southwest Corner Area Site Inspection Report - less enclosures
- 3.14. 3. - 1021283
DATE: 03/23/90 PAGES: 7
AUTHOR: Lazar Gorelik/Ecology & Environment, Inc.
ADDRESSEE: John Osborn/EPA
DESCRIPTION: Memo: Transmits photographs of and recommends no further remedial action at St. Vincent de Paul/Southwest Corner area of South Tacoma Swamp site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3.14. 3. - 1021270

DATE: 04/01/90 PAGES: 36

AUTHOR: Unknown/Ecology & Environment, Inc.

ADDRESSEE: J. E. Osborn/EPA

DESCRIPTION: Report: Screening Site Inspection Report, St. Vincent De Paul/Southwest Corner Area, Tacoma, Washington

3.14. 3. - 1021271

DATE: 04/01/90 PAGES: 33

AUTHOR: Unknown/Ecology & Environment, Inc.

ADDRESSEE: J. E. Osborn/EPA

DESCRIPTION: Report: Screening Site Inspection Report, St. Vincent De Paul/Southwest Corner Area, Tacoma, Washington

3.14. 3. - 1021276

DATE: 04/05/90 PAGES: 1

AUTHOR: Lazar Gorelik/Ecology & Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Memo: Site inspection recommendations, Lige & Wm. B. Dickson Company, Tacoma, Washington

3.14. 3. - 1021277

DATE: 04/05/90 PAGES: 1

AUTHOR: Lazar Gorelik/Ecology & Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Memo: Investigation-derived wastes, Lige & Wm. B. Dickson Company, Tacoma, Washington not generated

3.14. 3. - 1021278

DATE: 04/05/90 PAGES: 1

AUTHOR: Lazar Gorelik/Ecology & Environment, Inc.

ADDRESSEE: David Bennett/EPA

DESCRIPTION: Memo: Preliminary EPA HRS Score for Lige & Wm. B. Dickson Company, Tacoma, Washington not required

3.14. 3. - 1021281

DATE: 04/05/90 PAGES: 1

AUTHOR: Lazar Gorelik/Ecology & Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Memo: Transmits final site inspection report, St. Vincent de Paul/Southwest Corner Area, Tacoma, Washington - less enclosures

3.14. 3. - 1021269

DATE: 05/27/93 PAGES: 2

AUTHOR: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis

ADDRESSEE: William Dickson/Wm. Dickson Company

DESCRIPTION: Letter: Discusses encroachment on Burlington Northern Railroad property

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

SUB-HEAD: 3.14. 4. X-Ray Fluorescence Survey ESAT

3.14. 4. - 1021586

DATE: 02/01/91 PAGES: 279

AUTHOR: Unknown/CH2MHill

ADDRESSEE: Unknown/City of Tacoma

DESCRIPTION: Draft Executive Summary : South Tacoma Field Aquifer Recharge Feasibility Study

SUB-HEAD: 3.14. 5. Asbestos Assessment Survey

3.14. 5. - 1021591

DATE: 01/07/93 PAGES: 28

AUTHOR: Unknown/Prezant Associates, Inc.

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Asbestos Assessment Survey Tacoma Industrial Properties

3.14. 5. - 1021291

DATE: 01/19/93 PAGES: 4

AUTHOR: Thomas R. Anderson/TIP Management, Inc.

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Notification of planned partial building demolition

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

HEADING: 4. 0. . RECORD OF DECISION (ROD)

SUB-HEAD: 4. 1. . Record of Decision

4. 1. . - 1022483

DATE: 09/29/94 PAGES: 234

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Record of Decision for Commencement Bay South Tacoma Channel, South Tacoma Field Operable Unit

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

READING: 6. 0. . STATE COORDINATION

SUB-HEAD: 6. 1. . Correspondence

6. 1. . - 00000001

DATE: 12/28/87 PAGES: 2

AUTHOR: Philip G. Millam/EPA

ADDRESSEE: John Littler/State of Washington Dept. of Ecology

DESCRIPTION: Letter clarifying EPA and DOE roles re: soil testing

6. 1. . - 00000002

DATE: 08/10/89 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Glynis A. Carrosino/State of Washington Dept. of Ecology

DESCRIPTION: Letter notifying DOE that EPA sent Special Notice Letters to, and will be negotiating with, PRP's

6. 1. . - 00000005

DATE: 09/10/90 PAGES: 2

AUTHOR: Bert D. Bowen/State of Washington Dept. of Ecology

ADDRESSEE: Russell Post/City of Tacoma

DESCRIPTION: Letter stating that City of Tacoma's proposal to cap the PCB contaminated dry well is acceptable under conditions listed

6. 1. . - 00000003

DATE: 10/03/90 PAGES: 2

AUTHOR: William W. Harris/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter stating DOE's position on test pits and soil disposal handling

6. 1. . - 00000006

DATE: 10/10/90 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Bill Harris/State of Washington Dept. of Ecology

DESCRIPTION: Letter re: Admin. Order on Consent RI/FS, implementation

6. 1. . - 00000004

DATE: 10/16/90 PAGES: 1

AUTHOR: William W. Harris/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter commenting on draft fact sheet

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

6. 1. . - 1021481

DATE: 10/17/90 PAGES: 46

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Bill Harris/Washington Department of Ecology

DESCRIPTION: Letter: Transmits Administrative Order on Consent for Remedial Investigation/Feasibility Study

6. 1. . - 0000007

DATE: 04/09/91 PAGES: 4

AUTHOR: William W. Harris/State of Washington Dept. of Ecology

ADDRESSEE: Ty C. Schreiner/Kennedy, Jenks, Chilton

DESCRIPTION: Temporary Modification of Water Quality Criteria for S. Tacoma Field - cover letter and attached order for temporary modification

6. 1. . - 1021162

DATE: 05/31/91 PAGES: 2

AUTHOR: Eric K. Chapman/Kennedy/Jenks Consultants

ADDRESSEE: William W. Harris/Washington State Department of Ecology

DESCRIPTION: Letter: Notification that groundwater from installation of monitoring wells was discharged into a storm drain

6. 1. . - 1021480

DATE: 07/23/91 PAGES: 1

AUTHOR: William W. Harris/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Designates Peter C. Brooks as Toxics Cleanup Program's project manager

6. 1. . - 1021482

DATE: 12/23/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Peter Brooks/Washington Department of Ecology

DESCRIPTION: Letter: Transmits data validation reports for Phase I Soils and Groundwater - less enclosure

6. 1. . - 1021484

DATE: 04/09/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Peter Brooks/Washington Department of Ecology

DESCRIPTION: Letter: Requests State to identify ARARs or TBCs in evaluating potential cleanup measures

6. 1. . - 1021485

DATE: 05/12/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Peter Brooks/Washington Department of Ecology

DESCRIPTION: Letter: Transmits fourth quarter groundwater data - less enclosure

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. . - 1021486
DATE: 05/15/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Peter Brooks/Washington Department of Ecology
DESCRIPTION: Letter: Transmits final geophysical survey report - less enclosures
6. 1. . - 1021483
DATE: 05/21/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Discusses Washington Department of Ecology Cleanup Scenario
- less enclosure
6. 1. . - 1021487
DATE: 07/01/92 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Report: Pages 3 & 4 of the July - September 1992 quarterly report
Multi-Site Cooperative Agreement
6. 1. . - 1021488
DATE: 01/27/93 PAGES: 1
AUTHOR: Peter C. Brooks/State of Washington Department of Ecology
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Designates Brad Ewy as Toxics Cleanup Program's project
manager
6. 1. . - 1021489
DATE: 03/05/93 PAGES: 1
AUTHOR: Brad J. Ewy/State of Washington Department of Ecology
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Letter: Designates Chris Poindexter as Toxics Cleanup Program's
project manager
6. 1. . - 1021490
DATE: 12/06/93 PAGES: 1
AUTHOR: Chris A. Poindexter/State of Washington Department of Ecology
ADDRESSEE: Debbie Yamamoto/EPA
DESCRIPTION: Letter: Designates Marian Abbett as Toxics Cleanup Program's
project manager
6. 1. . - 1021491
DATE: 02/25/94 PAGES: 1
AUTHOR: Deborah J. Yamamoto/EPA
ADDRESSEE: Marian Abbett/Washington State Department of Ecology
DESCRIPTION: Letter: Transmits draft proposed plan for the STF Superfund Site -
less attachment

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

6. 1. . - 1021492

DATE: 04/05/94 PAGES: 46

AUTHOR: Carol Kraege/Washington State Department of Ecology

ADDRESSEE: Unknown/Washington State Department of Ecology

DESCRIPTION: Memo: Discusses amendments to MTCA with copies of the three bills

6. 1. . - 1033036

DATE: 09/27/94 PAGES: 1

AUTHOR: Carol Kraege/Washington Dept. of Ecology

ADDRESSEE: Chuck Clarke/EPA

DESCRIPTION: Letter stating that DOE concurs with the selected remedy as reviewed in the Record of Decision

SUB-HEAD: 6. 2. . ARARs

6. 2. . - 0000001

DATE: 09/29/89 PAGES: 9

AUTHOR: Glynis A. Carrosino/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Identification of ARARs - DRAFT

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

ADING: 7. 0. . ENFORCEMENT
SUB-HEAD: 7. 1. . Correspondence

7. 1. . - 0000001

DATE: 11/25/86 PAGES: 1

AUTHOR: Sharon Gwatkin/EPA

ADDRESSEE: Charles K. Douthwaite/Eisenhower, Carlson...

DESCRIPTION: Letter summarizing phone conversation re: TIP Management

7. 1. . - 0000002

DATE: 11/26/86 PAGES: 7

AUTHOR: Michael R. Thorp, Charles K. Douthwaite/Eisenhower, Carlson...

ADDRESSEE: James R. Moore, Charles E. Findley/EPA

DESCRIPTION: Letter stating Eisenhower's client's desire to be allowed to conduct the RI/FS without signing a 106 order

7. 1. . - 0000003

DATE: 12/02/86 PAGES: 2

AUTHOR: Charles K. Douthwaite/Eisenhower, Carlson...

ADDRESSEE: Sharon Gwatkin/EPA

DESCRIPTION: Letter re: clarification of Eisenhower's position

1. . - 0000004

DATE: 12/17/86 PAGES: 2

AUTHOR: Sharon Gwatkin/EPA

ADDRESSEE: R. W. Eubanks/BNRR

DESCRIPTION: Cover letter for final version of Administrative Order on Consent, stating requirements pursuant to 104(a)(1) of CERCLA, and EPA's conclusion that requirements have been met

7. 1. . - 0000005

DATE: 01/05/87 PAGES: 6

AUTHOR: Charles K. Douthwaite/Eisenhower, Carlson...

ADDRESSEE: Sharon Gwatkin, Patricia Storm/EPA

DESCRIPTION: Follow up letter to 12/19/86 meeting and informing EPA that TIP Management is reviewing its options given EPA's position

7. 1. . - 0000006

DATE: 02/09/87 PAGES: 3

AUTHOR: Sharon Gwatkin/EPA

ADDRESSEE: Charles K. Douthwaite/Eisenhower, Carlson

DESCRIPTION: Response to 1/5/87 letter stating EPA's position re: federal oversight of PRP's conducting of site management activities

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

7. 1. . - 0000007

DATE: 08/05/88 PAGES: 2

AUTHOR: Joseph P. Jackowski/McGavrick, Graves...

ADDRESSEE: Andy Boyd/EPA

DESCRIPTION: Letter confirming understanding made at 8/4/88 meeting

7. 1. . - 0000008

DATE: 10/11/89 PAGES: 1

AUTHOR: Charles E. Findley/EPA

ADDRESSEE: Robie G. Russell/EPA

DESCRIPTION: Concurrence for extension of negotiation deadline

7. 1. . - 0000009

DATE: 10/16/89 PAGES: 8

AUTHOR: PRP's/Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Letters sent to each (8) PRP re: 30 day extension of moratorium for negotiations at South Tacoma Field

7. 1. . - 0000010

DATE: 11/30/89 PAGES: 1

AUTHOR: Charles E. Findley/EPA

ADDRESSEE: Edward J. Brosius/Amsted Industries

DESCRIPTION: Letter stating EPA's acceptance of PRP's RI/FS as "good faith proposal"

7. 1. . - 0000011

DATE: 12/15/89 PAGES: 8

AUTHOR: Ross A. MacFarlane/Preston, Thorgrimson

ADDRESSEE: Robie Russell, Charles E. Findley/EPA

DESCRIPTION: Letters written to both Russell and Findley re: stating of PRP's position and requesting a meeting to discuss settlement matters at the policy level

7. 1. . - 0000012

DATE: 01/09/90 PAGES: 3

AUTHOR: Charles E. Findley/EPA

ADDRESSEE: Ross A. MacFarlane/Preston, Thorgrimson

DESCRIPTION: Response to 12/15/89 letter stating EPA's belief that it is best to proceed with development of the work plans without additional meeting

7. 1. . - 0000013

DATE: 03/27/90 PAGES: 17

AUTHOR: G. S. Karavitis/Tacoma Public Utilities

ADDRESSEE: Andrew Boyd/EPA

DESCRIPTION: Cover letter and list of documents recently discovered which may fall within the scope of information request sent previously

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. . - 0000014
DATE: 04/12/90 PAGES: 1
AUTHOR: Andrew Boyd/EPA
ADDRESSEE: G. S. Karavitis/Tacoma Public Utility
DESCRIPTION: Letter requesting documents from list sent 3/27/90
7. 1. . - 1021493
DATE: 08/31/90 PAGES: 3
AUTHOR: Joseph P. Jackowski/McGavick Graves Beale & McNerthney
ADDRESSEE: Andrew J. Boyd/EPA
DESCRIPTION: Letter: Discusses breakdown of talks between Burlington Northern Railroad and General Plastics - less enclosure
7. 1. . - 0000015
DATE: 09/20/90 PAGES: 2
AUTHOR: Andrew J. Boyd/EPA
ADDRESSEE: G. S. Karavitis/Ross Macfarlane, Preston Thorgrimson/Robert Rowan,
DESCRIPTION: Letter re: PRP signing of the RI/FS Consent Order
7. 1. . - 0000016
DATE: 10/22/90 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter re: rescheduling of 10/31/90 meeting with EPA
7. 1. . - 0000017
DATE: 01/31/91 PAGES: 3
AUTHOR: William E. Greenwood/Unknown
ADDRESSEE: Philip Millam/EPA
DESCRIPTION: Letter re: Burlington Northern's Railroad Company's Concerns with Administrative Order on Consent
7. 1. . - 1021494
DATE: 02/05/91 PAGES: 1
AUTHOR: Shawn M. Carter/Preston Thorgrimson Shidler Gates & Ellis
ADDRESSEE: Andy Boyd/EPA
DESCRIPTION: Letter: Designates Mark Stromberg as project manager
7. 1. . - 1021495
DATE: 07/18/91 PAGES: 1
AUTHOR: Marcia Newlands/Heller Ehrman White & McAuliffe
ADDRESSEE: Andrew J. Boyd/EPA
DESCRIPTION: Letter: Transmits amendment to Administrative Order on Consent - less enclosures

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7. 1. . - 1021164
DATE: 08/01/91 PAGES: 4
AUTHOR: Andrew J. Boyd/EPA
ADDRESSEE: Marcia Newlands/Heller Ehrman White & McAuliffe
DESCRIPTION: Letter: Transmits conformed copy of the amendment to the Administrative Order on Consent, adding Tacoma Industrial Properties as a party
7. 1. . - 1021165
DATE: 09/13/91 PAGES: 21
AUTHOR: Andrew J. Boyd/EPA
ADDRESSEE: Shawn M. Carter/Preston Thorgrimson Shidler Gates & Ellis
DESCRIPTION: Letter: Transmits fully executed copy of the amendments to the Administrative Order on Consent
7. 1. . - 1021607
DATE: 10/21/91 PAGES: 2
AUTHOR: Andrew Boyd/EPA
ADDRESSEE: William F. Joyce/Gorden Murphy Wallace
DESCRIPTION: Letter acknowledging 10/9/91 letter informing EPA of Amsted's intent to demolish structure on portion of S. Tacoma Field Site, and stating that Amsted must conduct the demolition in accordance with federal, state and local requirements
7. 1. . - 1021496
DATE: 01/06/92 PAGES: 2
AUTHOR: Martha Anamosa/Glacier Park Company
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad Company
DESCRIPTION: Letter: Discusses BNRR assumption of obligations of Glacier Park Company
7. 1. . - 1017572
DATE: 03/05/92 PAGES: 35
AUTHOR: Philip G. Millam/EPA
ADDRESSEE: Edward J. Brosius/Amsted Industries, Inc.
DESCRIPTION: Amended Order On Consent
7. 1. . - 1021497
DATE: 05/15/92 PAGES: 3
AUTHOR: Joan C. Shirley/EPA
ADDRESSEE: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis
DESCRIPTION: Letter: Discusses proposed Administrative Order on Consent for removal of buried tanks - less enclosure

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

1. . - 1021498
DATE: 05/26/92 PAGES: 2
AUTHOR: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis
ADDRESSEE: Joan C. Shirley/EPA
DESCRIPTION: Letter: Discusses proposed Administrative Order on Consent for removal of buried tanks
7. 1. . - 1021500
DATE: 09/02/92 PAGES: 108
AUTHOR: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis
ADDRESSEE: Joan C. Shirley/EPA
DESCRIPTION: Letter: Transmits request for dispute resolution regarding EPA's decision to apply residential risk standards
7. 1. . - 1021502
DATE: 09/14/92 PAGES: 4
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Discusses results of dispute resolution meeting
7. 1. . - 1021166
DATE: 09/21/92 PAGES: 2
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Notification that letter dated September 14, 1992 will be forwarded to legal representatives from each PRP
7. 1. . - 1021503
DATE: 09/25/92 PAGES: 2
AUTHOR: Unknown/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Legal Document: Withdrawal of Respondents' Request for Dispute Resolution [Signed by legal counsel for Amsted, BNR, City of Tacoma, PBS, TIP and USEPA]
7. 1. . - 1021167
DATE: 10/09/92 PAGES: 1
AUTHOR: Christine Pysk/EPA
ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad
DESCRIPTION: Letter: Notifies PRP of change in EPA Project Manager
7. 1. . - 1022478
DATE: 03/26/93 PAGES: 1
AUTHOR: Mark Stromberg/Burlington Northern Railroad
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Formal request for accounting of oversight cost for federal fiscal years 1990-1992

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

7. 1. . - 1021168

DATE: 04/26/93 PAGES: 2

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Notifies PRP of change in EPA Project Manager

7. 1. . - 1021504

DATE: 09/21/93 PAGES: 3

AUTHOR: Gregory A. Jacoby/McGavick Graves

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter: Discusses legal status of General Plastics Manufacturing Co.

SUB-HEAD: 7. 2. . Administrative Orders

7. 2. . - 0000001

DATE: 01/22/87 PAGES: 49

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Administrative Order on Consent #1086-08-08-106 for conduct of RI/FS signed by BNR and EPA

7. 2. . - 0000002

DATE: 10/15/90 PAGES: 47

AUTHOR: Unknown/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Administrative Order on Consent for Conduct of RI/FS and terminating AOC 1086-08-08-106 except Section XI, XIV, XV, XVIII signed by EPA, PBS, TPL, BNRR and Glacier Park Co.

7. 2. . - 1021505

DATE: 07/18/91 PAGES: 27

AUTHOR: Thomas R. Anderson/TIP Management, Inc.

ADDRESSEE: Unknown/EPA

DESCRIPTION: Legal Document: Addition of Tacoma Industrial Properties as a Respondent to the AOC on Consent for the RI/FS (1090-09-03-104/122)

SUB-HEAD: 7. 3. . Notice Letters, Requests for Information, and Responses

7. 3. . - 1021610

DATE: 03/08/87 PAGES: 6

AUTHOR: Charles E. Findley/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Letter addressed to Dear Sir or Madam, containing formal notification that the addressed's company is a PRP for the site, and containing a brief report of the status at the site, and requesting information to aid in site investigations

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

3. . - 1017583
DATE: 04/04/89 PAGES: 23
AUTHOR: Henry T. Schatz/General Plastics Manufacturing Company
ADDRESSEE: Judi Schwarz/EPA
DESCRIPTION: Letter: Response to EPA letter of March 8, 1989
7. 3. . - 1017574
DATE: 04/05/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Unknown/
DESCRIPTION: General Letter: Transmits formal notification of PRP's - less enclosures
7. 3. . - 1017591
DATE: 04/06/89 PAGES: 112
AUTHOR: Thomas R. Anderson/TIP Management, Inc.
ADDRESSEE: Judi Schwarz/EPA
DESCRIPTION: Letter: Responds to EPA letter of March 8, 1989
7. 3. . - 1017586
DATE: 04/07/89 PAGES: 1
AUTHOR: Mike E. Brandeberry/Glacier Park Company
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Letter: Clarifies corporate affiliation between BNRR and Glacier Park Co.
7. 3. . - 1017588
DATE: 04/07/89 PAGES: 33
AUTHOR: Unknown/Pioneer Builders Supply Co.
ADDRESSEE: Unknown/EPA
DESCRIPTION: Letter: Response to EPA questionnaire
7. 3. . - 1021605
DATE: 04/10/89 PAGES: 6
AUTHOR: Edward J. Brosius/Amsted Industries
ADDRESSEE: Judi Schwarz/EPA
DESCRIPTION: Reply to EPA's 3/8/89 information request
7. 3. . - 1017596
DATE: 04/19/89 PAGES: 2
AUTHOR: Robert L. Beale/McGavick Graves Beale & McNerthney
ADDRESSEE: Unknown/EPA
DESCRIPTION: Letter: Responds to EPA letter of March 7, 1989 to W. D. Whinery, Inc.

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7. 3. . - 1017575

DATE: 04/28/89 PAGES: 7

AUTHOR: Jeff Stoflet/Atlas Foundry & Machine Co.

ADDRESSEE: Judi Schwarz/EPA

DESCRIPTION: Letter: Response to EPA letter of March 7, 1989

7. 3. . - 1017578

DATE: 04/28/89 PAGES: 5

AUTHOR: G. S. Karavitis/Tacoma Public Utilities

ADDRESSEE: Charles E. Findley/EPA

DESCRIPTION: Letter: Responds to EPA letter of March 10, 1989

7. 3. . - 1017597

DATE: 04/28/89 PAGES: 5

AUTHOR: Robert L. Beale/McGavick Graves Beale & McNerthney

ADDRESSEE: Andrew Boyd/EPA

DESCRIPTION: Letter: Transmits documents concerning dates of operation of W. D. Whinery, Inc.

7. 3. . - 1017585

DATE: 05/01/89 PAGES: 14

AUTHOR: Martha Anamosa/Glacier Park Company

ADDRESSEE: Charles E. Findley/EPA

DESCRIPTION: Letter: Response to EPA letter of April 24, 1989

7. 3. . - 1017579

DATE: 05/03/89 PAGES: 3

AUTHOR: G. S. Karavitis/Tacoma Public Utilities

ADDRESSEE: Charles E. Findley/EPA

DESCRIPTION: Letter: Supplement to TPU response of April 28, 1989 to EPA letter of March 10, 1989

7. 3. . - 1017590

DATE: 05/26/89 PAGES: 7

AUTHOR: Thomas R. Anderson/TIP Management, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Transmits additional information requested by EPA

7. 3. . - 1017582

DATE: 07/07/89 PAGES: 3

AUTHOR: Charles E. Findley/EPA

ADDRESSEE: Allen Hoerner/Pioneer Builders Supply

DESCRIPTION: Letter: Formal notification of PRP status - less enclosures

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3. . - 1017576
DATE: 08/04/89 PAGES: 7
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Arthur Zaegel/Burlington Northern Railroad
DESCRIPTION: Letter: Transmits notification of formal negotiations with EPA -
less enclosure
7. 3. . - 1017577
DATE: 08/04/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: E. E. Coates/Tacoma Public Utilities
DESCRIPTION: Letter: Transmits notification of formal negotiations with EPA -
less enclosure
7. 3. . - 1017581
DATE: 08/04/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Henry T. Schatz/General Plastics
DESCRIPTION: Letter: Transmits notification of formal negotiations with EPA -
less enclosure
7. 3. . - 1017584
DATE: 08/04/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Martha Anamosa/Glacier Park Company
DESCRIPTION: Letter: Transmits notification of formal negotiations with EPA -
less enclosure
7. 3. . - 1017587
DATE: 08/04/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Allen Hoerner/Pioneer Builders Supply
DESCRIPTION: Letter: Transmits notification of formal negotiations with EPA -
less enclosure
7. 3. . - 1017589
DATE: 08/04/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Thomas R. Anderson/TIP Management, Inc.
DESCRIPTION: Letter: Transmits notification of formal negotiations with EPA -
less enclosure
7. 3. . - 1021606
DATE: 08/04/89 PAGES: 6
AUTHOR: Charles E. Findley/EPA
ADDRESSEE: Edward J. Brosius/Amsted Industries
DESCRIPTION: Letter notifying of 60-90 day period of formal negotiations with
EPA, containing formal demand for reimbursement of costs, and
providing general and site specific information to assist in

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negotiations

7. 3. . - 1021643

DATE: 08/04/89 PAGES: 20

AUTHOR: Cindy Colgate/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Notification Letter Response Form for special notice letters sent 8/4/89 (attached are first page of all letters sent, complete letter with attachments)

7. 3. . - 1021506

DATE: 10/26/92 PAGES: 12

AUTHOR: Carol Rushin/EPA

ADDRESSEE: Fred A. Thompson/City of Tacoma

DESCRIPTION: Letter providing notice of PRP status and 104(e) information request (date estimated, received by City on 10/29/92)

7. 3. . - 1021577

DATE: 12/03/92 PAGES: 338

AUTHOR: William L. Pugh/City of Tacoma

ADDRESSEE: Carol Rushin/EPA

DESCRIPTION: Cover letter and attached response to EPA's information request received by city on 10/28/92

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ADING: 8. 0. . NATURAL RESOURCE TRUSTEES

SUB-HEAD: 8. 1. . Correspondence

8. 1. . - 0000001

DATE: 04/07/81 PAGES: 4

AUTHOR: Howard S. Harris/NOAA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Cover letter and summary report re: toxic chemicals in marine ecosystem of Puget Sound since 1979

8. 1. . - 0000002

DATE: 03/13/84 PAGES: 2

AUTHOR: Bruce Blanchard/U.S. Dept. of Interior (DOI)

ADDRESSEE: Gene Lucero/EPA

DESCRIPTION: Letter re: Preliminary Natural Resource Survey, stating DOI has trust responsibility toward tribal rights and resources, urging EPA to consult regional officials of Fish and Wildlife Service, and Bureau of Indian Affairs

8. 1. . - 0000003

DATE: 05/09/89 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Washington Dept. of Natural Resources/Unknown

DESCRIPTION: Request for search to determine the existence of endangered or threatened species, etc...

8. 1. . - 0000004

DATE: 05/09/89 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Washington Natural Heritage Program/Unknown

DESCRIPTION: Request for search to determine the existence of endangered or threatened species, etc...

8. 1. . - 0000009

DATE: 05/09/89 PAGES: 1

AUTHOR: Lew Consiglieri/NOAA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Information on anadromous fish use of Flett and Leach Creek

8. 1. . - 0000010

DATE: 05/15/89 PAGES: 1

AUTHOR: Nancy Sprague/Washington State Dept. of Natural Resources

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter stating that currently, the Dept. of Natural Resources has no records for rare plants, high quality native plant communities, etc, in the area of S. Tacoma Field

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8. 1. . - 00000005
DATE: 08/08/89 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Preston Sleeper, Jr./DOI
DESCRIPTION: Letter notifying that EPA will be negotiating with 8 PRPs for RI/FS and inviting DOI to participate in negotiations
8. 1. . - 00000006
DATE: 09/21/89 PAGES: 3
AUTHOR: Office of Environmental Project Review, DOI/Unknown
ADDRESSEE: Regional Project Officer, EPA/Unknown
DESCRIPTION: Work Plan for Preliminary Natural Resource Survey
8. 1. . - 00000007
DATE: 12/11/89 PAGES: 4
AUTHOR: Jonathan P. Deason/DOI
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Preliminary Natural Resource Survey
8. 1. . - 00000008
DATE: 02/22/90 PAGES: 1
AUTHOR: Charles S. Polityka/DOI
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter acknowledging Psyk's letter inviting DOI to participate ; RI/FS negotiations at S. Tacoma Swamp
8. 1. . - 1021507
DATE: 08/27/91 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter: Advises of stage in Superfund process
8. 1. . - 1021508
DATE: 12/04/91 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter: Discusses wetland delineation and endangered plant species survey
8. 1. . - 1021509
DATE: 01/13/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter: Transmits draft Phase I Soil Investigation Report - less enclosure

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1. . - 1021510
DATE: 01/28/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter: Transmits Phase I Groundwater Investigation Report - less enclosure
8. 1. . - 1021511
DATE: 01/30/92 PAGES: 3
AUTHOR: Charles S. Polityka/DOI
ADDRESSEE: Ron Eggers/BIA
DESCRIPTION: Memo: Informs BIA, FWS & GS of availability of Phase I Soil and Groundwater Investigation Reports
8. 1. . - 1021512
DATE: 05/20/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter: Transmits draft surface water and sediment report - less enclosure
8. 1. . - 1021513
DATE: 06/11/92 PAGES: 2
AUTHOR: David C. Frederick/DOI
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Letter: Discusses FWS review of draft surface water and sediment report
8. 1. . - 1021514
DATE: 06/17/92 PAGES: 4
AUTHOR: Chris Mebane/NOAA
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Memo: Comments on surface water and sediment report
8. 1. . - 1021515
DATE: 07/08/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Jeff Krausmann/DOI
DESCRIPTION: Letter: Transmits data collected in Flett and Leach Creeks - less enclosure
8. 1. . - 1021516
DATE: 08/11/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Charles Polityka/DOI
DESCRIPTION: Letter: Updates DOI on status of RI/FS

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8. 1. . - 1021517

DATE: 08/14/92 PAGES: 1

AUTHOR: Charles S. Polityka/DOI

ADDRESSEE: Unknown/BIA

DESCRIPTION: Memo: Notifies BIA of EPA's development of a draft remedial investigation report

8. 1. . - 1017599

DATE: 10/28/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Charles Polityka/DOI

DESCRIPTION: Letter: Requests DOI review and comment of draft Ecological Risk Assessment - less enclosure

8. 1. . - 1021519

DATE: 10/28/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Christopher Mebane/NOAA

DESCRIPTION: Memo: Requests review of the Ecological Risk Assessment - less attachments

8. 1. . - 1017598

DATE: 11/16/92 PAGES: 3

AUTHOR: David C. Frederick/DOI

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Transmits FWS review of draft RI and draft ERA

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ADING: 9. 0. . CONGRESSIONAL HEARINGS/INQUIRIES

3-HEAD: 9. 1. . Correspondence

9. 1. . - 0000004

DATE: / / PAGES: 2

AUTHOR: Ralph Bauer/EPA

ADDRESSEE: Norm Dicks/Congressman

DESCRIPTION: Letter informing of status at S. Tacoma Swamp

9. 1. . - 0000001

DATE: 03/22/81 PAGES: 1

AUTHOR: Ruth Carson/Tahoma Audubon

ADDRESSEE: Senator Henry M. Jackson/Unknown

DESCRIPTION: Letter agreeing that there should be a coordinating agency responsible for toxic chemical problems in Commencement Bay, stating that Tahoma Audobon believes more funding should be given to existing agencies, not to creating a new agency

9. 1. . - 0000002

DATE: 06/13/86 PAGES: 1

AUTHOR: Norm Dicks/Member of Congress

ADDRESSEE: Ralph R. Bauer/Congress of the United States

DESCRIPTION: Letter requesting EPA Region 10 to investigate site at 56th and Proctor in Tacoma for possible toxic contamination

9. 1. . - 0000003

DATE: 07/18/86 PAGES: 2

AUTHOR: Andrea Beatty Riniker/Dept. of Ecology

ADDRESSEE: Norm Dicks/Member of Congress

DESCRIPTION: Letter in response to Dick's concern about hazardous waste contamination in Tacoma

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HEADING: 10. 0. . PUBLIC PARTICIPATION

SUB-HEAD: 10. 1. . Correspondence

10. 1. . - 0000001

DATE: 12/30/85 PAGES: 2

AUTHOR: Phil Wong/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Letter informing of past and future soil and groundwater monitoring in S. Tacoma to maintain drinking water resources

10. 1. . - 1021520

DATE: 05/09/91 PAGES: 1

AUTHOR: Michelle Pirzadeh/EPA

ADDRESSEE: Unknown/EPA

DESCRIPTION: Memo to File: Bulk mailing of fact sheet - less attachment

10. 1. . - 1021521

DATE: 05/10/91 PAGES: 3

AUTHOR: Michelle Pirzadeh/EPA

ADDRESSEE: Henry Schatz/General Plastics

DESCRIPTION: Letter: Transmits fact sheet - less enclosure

10. 1. . - 1021522

DATE: 07/11/91 PAGES: 11

AUTHOR: Beth Feelay/EPA

ADDRESSEE: Jeanne Duvall/Unknown

DESCRIPTION: Letter: Invitation to comment on activities of STF Superfund Site

10. 1. . - 1021169

DATE: 08/13/91 PAGES: 8

AUTHOR: Michelle Pirzadeh/EPA

ADDRESSEE: Jane Hedges/Tacoma-Pierce County Health Department

DESCRIPTION: Letter: Transmits Community Relations Strategy and tentative schedule for South Tacoma Field Remedial Investigation/Feasibility Study

10. 1. . - 1021523

DATE: 12/06/91 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Ken Merry/Tacoma Water Division

DESCRIPTION: Letter: Transmits groundwater data - less enclosure

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1. . - 1021525
DATE: 03/16/92 PAGES: 3
AUTHOR: Kevin Oates/EPA
ADDRESSEE: Ross A. Macfarlane/Preston Thorgrimson Shidler Gates & Ellis
DESCRIPTION: Letter: Discusses development and preparation of fact sheet
10. 1. . - 1021524
DATE: 06/15/92 PAGES: 3
AUTHOR: Glynda J. Steiner/Kennedy/Jenks Consultants
ADDRESSEE: Cindy Colgate/EPA
DESCRIPTION: Letter: Transmits comments on draft fact sheet
10. 1. . - 1021526
DATE: 07/29/93 PAGES: 2
AUTHOR: Michelle Pirzadeh/EPA
ADDRESSEE: Gary Reese/Tacoma Public Library
DESCRIPTION: Letter: Transmits Remedial Investigation/Feasibility Study and human health and ecological risk assessments for inclusion in the repository - less enclosures
- SUB-HEAD: 10. 2. . Community Relations Plan
10. 2. . - 0000001
DATE: / / PAGES: 11
AUTHOR: EPA/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Community Relations Plan Commencement Bay, Tacoma, Washington
10. 2. . - 1021527
DATE: 09/01/89 PAGES: 52
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Report: Community Relations Plan for Commencement Bay-Nearshore/Tideflats and Commencement Bay-South Tacoma Channel Superfund Sites
10. 2. . - 1021170
DATE: 06/01/91 PAGES: 2
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Outline: RI/FS Community Relations Strategy and Tentative Schedule
- SUB-HEAD: 10. 3. . Fact Sheets/Press Releases

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10. 3. . - 0000001

DATE: 02/01/87 PAGES: 2

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Superfund Project Update Tacoma Swamp

10. 3. . - 1021533

DATE: 03/13/89 PAGES: 2

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: South Tacoma Swamp Superfund Site

10. 3. . - 1021538

DATE: 04/01/89 PAGES: 8

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: Update on Commencement Bay and South Tacoma Channel Superfund Sites

10. 3. . - 0000002

DATE: 02/01/90 PAGES: 6

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Fact Sheet: Commencement Bay Nearshore Tidelands and South Tacoma Channel Superfund Sites Updates

10. 3. . - 0000006

DATE: 02/05/90 PAGES: 13

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Superfund Project Update : South Tacoma Field Tacoma, Washington

10. 3. . - 1021528

DATE: 02/05/90 PAGES: 2

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: Superfund Project Update

10. 3. . - 0000003

DATE: 08/01/90 PAGES: 6

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Fact Sheets: Update of Hazardous Waste Cleanup Projects Tacoma, Washington

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3. . - 0000004
DATE: 10/19/90 PAGES: 2
AUTHOR: EPA/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Fact Sheet: S. Tacoma Field Superfund Site Tacoma, Washington

10. 3. . - 0000005
DATE: 02/13/91 PAGES: 9
AUTHOR: EPA/Unknown
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Fact Sheet: Update of Hazardous Waste Cleanup Projects Tacoma, Washington

10. 3. . - 1021529
DATE: 05/10/91 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: South Tacoma Field Superfund Site

10. 3. . - 1021530
DATE: 02/14/92 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: South Tacoma Field Superfund Site

10. 3. . - 1021531
DATE: 03/01/92 PAGES: 12
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: Update on Hazardous Waste Cleanup Projects

10. 3. . - 1021532
DATE: 06/18/92 PAGES: 4
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: South Tacoma Field Superfund Site

10. 3. . - 1021536
DATE: 05/11/93 PAGES: 2
AUTHOR: Sanoi Doughton/The News Tribune
ADDRESSEE: Unknown/
DESCRIPTION: News Article: EPA wants say in protecting aquifer under Pierce County

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10. 3. . - 1021535

DATE: 06/01/93 PAGES: 8

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: Update on Hazardous Waste Cleanup Projects

10. 3. . - 1021539

DATE: 01/01/94 PAGES: 1

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: Page 4 only of information on South Tacoma Field

10. 3. . - 1021537

DATE: 01/24/94 PAGES: 7

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: Update on Hazardous Waste Cleanup Projects

SUB-HEAD: 10. 5. . Proposed Plan

10. 5. . - 1021675

DATE: 06/13/94 PAGES: 20

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: The Proposed Plan for Cleanup : South Tacoma Field Superfund Site
Commencement Bay South Tacoma Channel Tacoma, Washington

10. 5. . - 1021679

DATE: 06/15/94 PAGES: 21

AUTHOR: Deborah J. Yamamoto/EPA

ADDRESSEE: To the Reader/Unknown

DESCRIPTION: Errata notice and attached Proposed Plan incorporating corrected errors

SUB-HEAD: 10. 6. . Transcript/Comments on the Proposed Plan

10. 6. . - 1033020

DATE: 06/27/94 PAGES: 6

AUTHOR: Dick Bartells/Tacoma Environmental Commission

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Meeting Minutes of the regular meeting of the Tacoma Environmental Commission discussing South Tacoma Field Superfund site

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6. . - 1033030
DATE: 06/28/94 PAGES: 1
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Corrections to the Transcript, South Tacoma Field Public Meeting on June 28, 1994
10. 6. . - 1033031
DATE: 06/28/94 PAGES: 45
AUTHOR: Gerald D. Kohler/Bayside Reporters
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Proceedings : Public Meeting, South Tacoma Field Superfund Site
10. 6. . - 1033028
DATE: 07/07/94 PAGES: 1
AUTHOR: Margaret L. Corbin/Puget Sound Air Pollution Control Agency
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Comments on the Proposed Plan
10. 6. . - 1033027
DATE: 07/13/94 PAGES: 1
AUTHOR: John D. Stetson/City of Tacoma
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Letter requesting two week extension to the public comment period
10. 6. . - 1033021
DATE: 07/14/94 PAGES: 2
AUTHOR: William F. Joyce/Ogden, Murphy, Wallace
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Comments on the Proposed Plan for South Tacoma Field
10. 6. . - 1033023
DATE: 07/14/94 PAGES: 2
AUTHOR: Dick Bartells/City of Tacoma
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Comments on the Proposed Plan for South Tacoma Field
10. 6. . - 1033022
DATE: 07/15/94 PAGES: 2
AUTHOR: John D. Stetson/City of Tacoma
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Comments on the Proposed Plan for South Tacoma Field

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10. 6. . - 1033025

DATE: 07/15/94 PAGES: 8

AUTHOR: Ross A. Macfarlane/Preston, Gates and Ellis

ADDRESSEE: Deborah J. Yamamoto/EPA

DESCRIPTION: Comments on the Proposed Plan

10. 6. . - 1033029

DATE: 07/15/94 PAGES: 1

AUTHOR: Gregory D. Thomas/Agency for Toxic Substances and Disease Registry

ADDRESSEE: Debbie Yamamoto/EPA

DESCRIPTION: Comments on the Proposed Plan

10. 6. . - 1033026

DATE: 07/25/94 PAGES: 1

AUTHOR: Randy Smith/EPA

ADDRESSEE: Grechen Schmidt/EPA

DESCRIPTION: WPO memo stating that Tacoma's Dept. of Public Works will not need extension of time to submit comments on the Proposed Plan

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HEADING: 11. 0. . TECHNICAL SOURCES AND GUIDANCES

JB-HEAD: 11. 1. . EPA Guidance

11. 1. . - 1021559

DATE: / / PAGES: 8

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Record of Decision Checklist for Final Groundwater Actions

11. 1. . - 1021540

DATE: 07/01/89 PAGES: 4

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Superfund LDR Guide #5: Determining when land disposal restrictions are applicable to CERCLA response actions

11. 1. . - 1033035

DATE: 09/01/89 PAGES: 3

AUTHOR: Henry L. Longest II/EPA

ADDRESSEE: Directors, Waste Management Divisions/EPA

DESCRIPTION: Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites, OSWER Directive #9355.4-02

. 1. . - 1021541

DATE: 10/01/89 PAGES: 6

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: RCRA ARARs: Focus on closure requirements

11. 1. . - 1021543

DATE: 11/01/89 PAGES: 4

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Fact Sheet: The Feasibility Study - Development and screening of remedial action alternatives

11. 1. . - 1021542

DATE: 11/30/89 PAGES: 22

AUTHOR: Henry L. Longest/EPA

ADDRESSEE: Sylvia Lowrance/EPA

DESCRIPTION: Memo: Transmits analysis of treatability data for soil and debris

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11. 1. . - 1021544
DATE: 04/01/90 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: A guide to selecting Superfund remedial actions
11. 1. . - 1021545
DATE: 05/01/90 PAGES: 3
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: ARARs Q's & A's - compliance with the toxicity characteristics rule
11. 1. . - 1021546
DATE: 08/01/90 PAGES: 6
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: A guide on remedial actions at Superfund sites with PCB contamination
11. 1. . - 1022477
DATE: 08/01/90 PAGES: 86
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Guidance on Remedial Actions for Superfund Sites with PCB Contamination
11. 1. . - 1021547
DATE: 09/01/90 PAGES: 163
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Report: Research & Development Technical support Document on Lead
11. 1. . - 1021548
DATE: 09/01/90 PAGES: 5
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Superfund LDR Guide #6A (2nd Edition): Obtaining a soil and debris treatability variance for remedial actions
11. 1. . - 1021549
DATE: 10/10/90 PAGES: 9
AUTHOR: Henry L. Longest/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Memo: Suggested ROD language for various ground water remediation options

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11. 1. . - 1021171
DATE: 04/01/91 PAGES: 10
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: EPA Bulletin: Superfund Engineering Issue; Treatment of Lead-Contaminated Soils
11. 1. . - 1021551
DATE: 07/11/91 PAGES: 2
AUTHOR: David Smith/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Letter: Request for input to revise the "Guide for Conducting Treatability Studies Under CERCLA"
11. 1. . - 1021552
DATE: 02/01/92 PAGES: 7
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Fact Sheet: Presumptive remedies - policy and procedures
11. 1. . - 0003245
DATE: 02/13/92 PAGES: 153
AUTHOR: Jerry Clifford/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Memo: Review of the "Guidance on Preparing Superfund Decision Documents"
11. 1. . - 1021553
DATE: 05/27/92 PAGES: 14
AUTHOR: Don R. Clay/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Memo: Update on considerations in ground-water remediation at Superfund sites and RCRA facilities
11. 1. . - 1021554
DATE: 05/01/93 PAGES: 13
AUTHOR: Unknown/EPA
ADDRESSEE: Unknown/
DESCRIPTION: Engineering Bulletin: Solidification/Stabilization of Organics and Inorganics
11. 1. . - 1021555
DATE: 07/13/93 PAGES: 4
AUTHOR: Peter Feldman/EPA
ADDRESSEE: Unknown/EPA
DESCRIPTION: Memo: Background information for review of "Evaluation of the Technical Impracticability of Ground-Water Restoration"

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11. 1. . - 1021556

DATE: 10/01/93 PAGES: 25

AUTHOR: B. Davila/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Report: Engineering Issue - Technology alternatives for the remediation of PCB-contaminated soil and sediment

11. 1. . - 1021557

DATE: 10/04/93 PAGES: 34

AUTHOR: Richard J. Guimond/USPHS

ADDRESSEE: Unknown/EPA

DESCRIPTION: Memo: Transmittal of OSWER Directive 9234.2-25 "Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration"

11. 1. . - 1021558

DATE: 12/01/93 PAGES: 26

AUTHOR: Unknown/EPA

ADDRESSEE: Unknown/

DESCRIPTION: Engineering Forum Issue: Considerations in deciding to treat contaminated unsaturated soils in situ

11. 1. . - 1033037

DATE: 09/27/94 PAGES: 4

AUTHOR: Deborah Yamamoto/EPA

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Checklist of EPA Guidances used for Administrative Records

SUB-HEAD: 11. 2. . Technical Sources

11. 2. . - 1021564

DATE: / / PAGES: 9

AUTHOR: Unknown/HHS

ADDRESSEE: Unknown/

DESCRIPTION: Pamphlet: Toxicological profile for lead

11. 2. . - 1021565

DATE: / / PAGES: 1

AUTHOR: Unknown/ATSDR

ADDRESSEE: Unknown/

DESCRIPTION: Discusses the current position ATSDR has taken with respect to lead in surface soils

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11. 2. . - 0000001
DATE: 06/01/90 PAGES: 9
AUTHOR: Dean Neptune/Eugene P. Brantly/Michael J. Messner/Daniel I. Michael
ADDRESSEE: Unknown/Unknown
DESCRIPTION: Making in Superfund: A Data Quality Objectives Case Study
(excerpt from HMC Journal, May/June 1990)
11. 2. . - 1021560
DATE: 04/29/91 PAGES: 14
AUTHOR: Robert S. Kerr/Environmental Research Library
ADDRESSEE: Unknown/
DESCRIPTION: Abstracts from symposium on soil venting
11. 2. . - 1021562
DATE: 07/01/92 PAGES: 15
AUTHOR: Unknown/Ecology and Environment, Inc.
ADDRESSEE: Unknown/
DESCRIPTION: Report: Final Remedial Investigation Report for Alaskan Battery
Enterprises, Fairbanks, Alaska - Volume I
11. 2. . - 1021561
DATE: 09/01/92 PAGES: 8
AUTHOR: Andy Davis/PTI Environmental Services
ADDRESSEE: Unknown/Environmental Science & Technology Magazine
DESCRIPTION: Article: Bioavailability of arsenic and lead in soils from the
Butte, Montana mining district
11. 2. . - 1021563
DATE: 04/19/93 PAGES: 16
AUTHOR: Unknown/
ADDRESSEE: Unknown/
DESCRIPTION: Appendix F of unknown document: Background chemical concentrations
in groundwater and soil for the ASARCO smelter site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

HEADING: 12. 0. . HEALTH ASSESSMENTS

SUB-HEAD: 12. 1. . Correspondence

12. 1. . - 1021191

DATE: 12/27/91 PAGES: 8

AUTHOR: Anne Duffy/Washington State Dept. of Health

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and enclosed brief overview on the groundwater contamination associated with the site and contaminants of health concern

12. 1. . - 1021172

DATE: 02/06/92 PAGES: 1

AUTHOR: Gregory D. Thomas/HHS

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo: Discusses Blackberry Investigation Report

12. 1. . - 1021173

DATE: 03/23/92 PAGES: 7

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Anne Duffy/Washington State Department of Health

DESCRIPTION: Letter: Discusses the Phase I Soil Investigation Report

12. 1. . - 1021174

DATE: 06/24/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Discusses security at the STF Superfund Site

12. 1. . - 1021175

DATE: 06/25/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Greg Thomas/HHS

DESCRIPTION: Memo: Requests opinion on potential public health concerns associated with contaminant levels at STF Superfund Site

12. 1. . - 1021566

DATE: 07/07/92 PAGES: 1

AUTHOR: Robert H. Rowan/The Dolack Hansler Firm

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses security at the STF site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 1. . - 1021567

DATE: 07/07/92 PAGES: 2

AUTHOR: Mark W. Stromberg/Burlington Northern Railroad

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses security at the STF site

12. 1. . - 1021570

DATE: 07/08/92 PAGES: 2

AUTHOR: William F. Joyce/Ogden Murphy Wallace

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses security at the STF site

12. 1. . - 1021571

DATE: 07/13/92 PAGES: 1

AUTHOR: G. S. Karavitis/City of Tacoma

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses security at the STF site

12. 1. . - 1021177

DATE: 08/05/92 PAGES: 12

AUTHOR: Anne Duffy/Washington State Department of Health

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses site security in response to surface soil contamination

12. 1. . - 1021568

DATE: 08/05/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Discusses security at the STF site

12. 1. . - 1021569

DATE: 08/07/92 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Anne Duffy/Washington State Department of Health

DESCRIPTION: Letter: Discusses security at the STF site

12. 1. . - 1021573

DATE: 08/26/92 PAGES: 4

AUTHOR: Anne Duffy/Washington State Department of Health

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter: Discusses security at the STF site

(TSWAR) COMM. BAY - S. TACOMA FIELD REMEDIAL A/R INDEX

12. 1. . - 1021176

DATE: 08/27/92 PAGES: 2

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Mark W. Stromberg/Burlington Northern Railroad

DESCRIPTION: Letter: Discusses site security

12. 1. . - 1021574

DATE: 12/29/92 PAGES: 2

AUTHOR: Nathan A. Graves/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter: Discusses security at the STF site



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. Box 47600 • Olympia, Washington 98504-7600 • (206) 407-6000 • TDD Only (Hearing Impaired) (206) 407-6006

September 27, 1994

Mr. Chuck Clarke
Regional Administrator
U.S. EPA, Region 10
1200 Sixth Avenue
Seattle, WA 98101

Dear Mr. Clarke:

The Washington State Department of Ecology (Ecology) has reviewed the Record of Decision for the South Tacoma Field (STF) Superfund Site. We concur with the selected remedy. The remedy utilizes an appropriate combination of treatment, containment, and institutional controls for the contaminated soil throughout the STF site, and treatment of contaminated groundwater at the Pioneer Builders Supply portion of the site. This satisfies Ecology's expectation for the use of permanent solutions to the maximum extent practicable.

Ecology has identified Total Petroleum Hydrocarbons (TPH) as a potential contaminant of concern at Pioneer Builders Supply. We recognize that hazardous substances as defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), do not include petroleum, and thus CERCLA exempts cleanup of petroleum contamination. However, the Environmental Protection Agency has agreed to monitor for TPH, and to notify Ecology when groundwater restoration is complete for all other contaminants of concern. Ecology may then pursue further action to address potential TPH contamination under the Model Toxics Control Act, if appropriate. With this condition, the selected remedy provides measures that will fulfill the requirements of Washington law and regulation for the site.

According to agreements recently reached between the EPA Superfund Branch and Ecology, Ecology will no longer take an active support role in STF site activities. In addition to the notification mentioned above, Ecology expects to be notified and briefed by EPA staff when delisting of the site from the National Priorities List is proposed. It has been a pleasure to work on the STF site with EPA's dedicated staff.

Sincerely,

Carol Kraege
Carol Kraege
Acting Program Manager
Toxics Cleanup Program

CBK:MA:ln

cc: Debbie Yamamoto, EPA
Timothy L. Nord, Ecology
Marian Abbett, Ecology
Martha Maggi, Ecology

APPENDIX C

STATE CONCURRENCE LETTER

S. TACOMA FIELD - AMSTED PROPERTY REMOVAL
ADMINISTRATIVE RECORD
TABLE OF CONTENTS
September 26, 1994

0.0 INDEX/TABLE OF CONTENTS

1.0 SITE IDENTIFICATION

Section 1.0 of the South Tacoma Field Remedial Investigation/Feasibility Study Administrative Record is incorporated by reference into this Removal Administrative Record. A listing of these documents is attached at the end of the index for this Amsted Property Removal Administrative Record.

2.0 AMSTED PROPERTY REMOVAL

2.1 Correspondence

2.2 Action Memorandum

2.3 Work Plan

2.4 Sampling Data

2.4.1 EPA Oversight Sampling Data

2.5 Well Closure Report

2.6 Subsurface Investigation Report

2.7 Streamlined Risk Assessment

3.0 EPA OVERSIGHT

3.1 Work Plan/QAPP/Oversight Report

4.0 ENFORCEMENT

4.1 Correspondence

4.2 Administrative Order on Consent

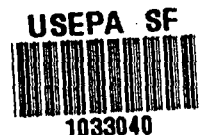
5.0 STATE COORDINATION

5.1 Correspondence

6.0 PUBLIC PARTICIPATION

6.1 Fact Sheets

AR 1.8



(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

HEADING: 2. 0. . . AMSTED REMOVAL RESPONSE

SUB-HEAD: 2. 1. . . Correspondence

2. 1. . . - 00000001

DATE: 03/04/91 PAGES: 1

AUTHOR: Glynda Steiner/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter notifying of several feet of petroleum product observed during an inspection of the site

2. 1. . . - 00000002

DATE: 04/22/91 PAGES: 4

AUTHOR: Owen G. Loshbough, Nathan A. Graves/Kennedy, Jenks, Chilton

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter describing additional work proposed by Amsted Industries to assess potential environmental concerns regarding the condition of groundwater monitoring wells at the Amsted property

2. 1. . . - 1033010

DATE: 08/23/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Tom Todd/Washington Dept. of Ecology

DESCRIPTION: Cover letter requesting DOE's review of report entitled, "Preliminary Fuel Investigation"

2. 1. . . - 00000003

DATE: 08/28/91 PAGES: 3

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Edward Brosius/Amsted Industries

DESCRIPTION: Letter formally outlining the EPA's position on the July 1991, Well Closure and Preliminary Fuel Investigation Report

2. 1. . . - 1033011

DATE: 10/29/91 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Chris Field/EPA

DESCRIPTION: Letter requesting review of Work Plan which outlines additional work necessary to remove hydrocarbon product from well

2. 1. . . - 00000004

DATE: 11/20/91 PAGES: 7

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Edward Brosius/Amsted Industries

DESCRIPTION: Letter and attached comments on the October 1991, Well Installation and Monitoring Work Plan

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

1. . - 0000005
DATE: 01/10/92 PAGES: 2
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Owen Loshbough/Kennedy, Jenks, Chilton
DESCRIPTION: Letter re: sampling from MW-2 at the Amsted properties
2. 1. . - 0000006
DATE: 01/16/92 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Edward Brosius/Amsted Industries
DESCRIPTION: Letter providing comments on December 1991, Well Installation and Monitoring Work Plan for the Amsted property removal
2. 1. . - 0000007
DATE: 03/03/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Owen G. Loshbough/Kennedy, Jenks, Chilton
DESCRIPTION: Letter re: proposal for chemical analyses of soils
2. 1. . - 1033015
DATE: 03/05/92 PAGES: 1
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Peter Brooks/Washington Dept. of Ecology
DESCRIPTION: Cover letter for final work plan for the installation of additional monitoring wells on the Amsted Property, and a copy of the Amended Administrative Order on Consent
2. 1. . - 1033009
DATE: 04/07/92 PAGES: 1
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Owen Loshbough/Kennedy/Jenks Consultants
DESCRIPTION: Cover letter for validated results of petroleum products in MW-2
2. 1. . - 1033008
DATE: 04/16/92 PAGES: 2
AUTHOR: Owen G. Loshbough/Kennedy/Jenks Consultants
ADDRESSEE: Lorie Morgan/Washington Dept. of Ecology
DESCRIPTION: Letter requesting variance from compliance with WAC 173-160-150(2)(a)
2. 1. . - 1033014
DATE: 09/03/92 PAGES: 2
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Owen Loshbough/Kennedy/Jenks Consultants
DESCRIPTION: Memo summarizing major issues discussed during 9/3/92 meeting, including information received in follow-up conversation with EPA QA/QC personnel

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

2. 1. . - 1033013

DATE: 02/10/93 PAGES: 2

AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Letter informing EPA that Kennedy/Jenks personnel will be performing the first quarter groundwater monitoring, modifications to the work plan are included

2. 1. . - 1033012

DATE: 02/26/93 PAGES: 2

AUTHOR: Nathan A. Graves/Kennedy/Jenkks Consultants

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Letter informing EPA that resampling of the groundwater monitoring wells will be conducted on 3/2/93

2. 1. . - 1033017

DATE: 05/12/93 PAGES: 1

AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Letter informing EPA that Kennedy/Jenks personnel will be performing second quarter groundwater monitoring on 5/20 and 5/21

2. 1. . - 1033018

DATE: 05/19/93 PAGES: 1

AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Letter informing EPA that Kennedy/Jenks has rescheduled second quarter groundwater monitoring for 5/27 and 5/28

2. 1. . - 1033019

DATE: 12/29/93 PAGES: 1

AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Letter informing EPA that Kennedy/Jenks will be performing the fourth quarter groundwater monitoring on 1/6 and 1/7

2. 1. . - 1021680

DATE: 03/08/94 PAGES: 3

AUTHOR: John Frerich/ICF Kaiser

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Fax cover sheet regarding review of 4th quarter sampling results for Amsted Property

2. 1. . - 1021681
DATE: 03/10/94 PAGES: 7
AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants
ADDRESSEE: Deborah J. Yamamoto/EPA
DESCRIPTION: Letter recommending preferred final remedial action for petroleum hydrocarbons detected in soil and groundwater at the former Griffin Wheel Brass Foundry

SUB-HEAD: 2. 2. . Action Memorandum

2. 2. . - 0000001
DATE: 05/09/91 PAGES: 5
AUTHOR: Phil Millam/EPA
ADDRESSEE: Charles E. Findley/EPA
DESCRIPTION: Approval of CERCLA Administrative Order on Consent for a Removal Action by the Amsted Industries, Inc., on Amsted property at the South Tacoma Field Superfund Site, Tacoma, Washington

SUB-HEAD: 2. 3. . Work Plan

2. 3. . - 0000001
DATE: 02/01/92 PAGES: 188
AUTHOR: Kennedy/Jenks/Chilton/Unknown
ADDRESSEE: Amsted Industries/Unknown
DESCRIPTION: Well Installation and Monitoring Work Plan : Former Griffin Wheel Brass Foundry, Tacoma, Washington

2. 3. . - 1033016
DATE: 02/24/92 PAGES: 1
AUTHOR: Owen Loshbough/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter for three copies of Final Work Plan for Well Installation and Monitoring

2. 3. . - 1021683
DATE: 09/22/92 PAGES: 25
AUTHOR: Owen G. Loshbough/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Monitoring Well Criteria (one blueprint included)

2. 3. . - 1021682
DATE: 09/23/92 PAGES: 2
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Glenn Bruck/EPA
DESCRIPTION: Letter requesting review of adequacy of the monitoring plan that Kennedy/Jenks has proposed (see document 2.3 1021683)

(TSWAM). COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

3. . - 1022000

DATE: 01/15/93 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Nathan Graves/Kennedy/Jenks Consultants

DESCRIPTION: Letter providing approval for 1/12/93 proposal to purchase and install Well Wizard dedicated pumps

2. 3. . - 1021690

DATE: 01/22/93 PAGES: 64

AUTHOR: Nathan A. Graves/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Work Plan : Groundwater Monitoring Program Former Griffin Wheel Brass Foundry Tacoma, Washington DRAFT

2. 3. . - 1021689

DATE: 01/25/93 PAGES: 2

AUTHOR: Loren McPhillips/EPA

ADDRESSEE: Nathan Graves/Kennedy/Jenks Consultants

DESCRIPTION: Letter granting EPA interim approval of the Final Work Plan for the Groundwater Monitoring Program

2. 3. . - 1021701

DATE: 01/29/93 PAGES: 1

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Memo re: Review of Draft Work Plan for Groundwater Monitoring Program, Former Griffin Wheel Brass Foundry, Tacoma, WA, Kennedy/Jenks Consultants 1-22-93

2. 3. . - 1021700

DATE: 02/01/93 PAGES: 2

AUTHOR: Glenn Bruck/EPA

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Memo re: Review of Draft Work Plan (1-22-93) for Groundwater Monitoring Program, former Griffin Wheel Brass Foundry, (Amstead) Tacoma, WA

2. 3. . - 1021699

DATE: 02/02/93 PAGES: 3

AUTHOR: John Frerich/ICF Technology Inc.

ADDRESSEE: Loren McPhillips/EPA

DESCRIPTION: Fax cover sheet and attached comments on Draft Groundwater Monitoring Program

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

2. 3. . - 1021684
DATE: 02/16/93 PAGES: 65
AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Work Plan Groundwater Monitoring Program Former Griffin Wheel
Brass Foundry Tacoma, Washington FINAL (includes 1 blueprint)
2. 3. . - 1021696
DATE: 02/25/93 PAGES: 2
AUTHOR: Loren McPhillips/EPA
ADDRESSEE: Nathan Graves/Kennedy/Jenks Consultants
DESCRIPTION: Letter granting EPA approval of the Final Work Plan for the
Groundwater Monitoring Program at the Amsted Property
- SUB-HEAD: 2. 4. . Sampling Data
2. 4. . - 1033001
DATE: 03/02/92 PAGES: 35
AUTHOR: Owen G. Loshbough/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Transmittal of Analytical Results for Petroleum Product in MW-2
and Proposed Soil Analysis Parameters
4. . - 1033002
DATE: 10/28/92 PAGES: 3
AUTHOR: Owen Loshbough/Kennedy/Jenks Consultants
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Transmittal of Preliminary Laboratory Data Water Sample from Well
NMW-13
2. 4. . - 1021685
DATE: 04/05/93 PAGES: 45
AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants
ADDRESSEE: Loren McPhillips/EPA
DESCRIPTION: First Quarter Groundwater Monitoring Report
2. 4. . - 1021686
DATE: 07/01/93 PAGES: 28
AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Second Quarter Groundwater Monitoring Report
2. 4. . - 1021687
DATE: 10/26/93 PAGES: 27
AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants
ADDRESSEE: Deborah Yamamoto/EPA
DESCRIPTION: Third Quarter Groundwater Monitoring Report

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

2. 4. - 1021688

DATE: 02/10/94 PAGES: 29

AUTHOR: Julie A. Reid/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Fourth Quarter Groundwater Monitoring Report

SUB-HEAD: 2. 4. 1. EPA Oversight Sampling Data

2. 4. 1. - 1021999

DATE: 02/14/92 PAGES: 10

AUTHOR: Joe Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Memo re: Report of Data Validation for South Tacoma Field - Amsted, VOA analysis of samples 92034595 and 92034596

2. 4. 1. - 1021998

DATE: 02/24/92 PAGES: 15

AUTHOR: Linda K. Karsonovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Review of South Tacoma Field Samples for PAHs

2. 4. 1. - 1021997

DATE: 03/03/92 PAGES: 6

AUTHOR: J. Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation of BNA's for the South Tacoma Field Project, Sample 92034595

2. 4. 1. - 1021982

DATE: 03/05/92 PAGES: 29

AUTHOR: John Frerich/ICF

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Field Oversight Checklist

2. 4. 1. - 1021996

DATE: 03/06/92 PAGES: 23

AUTHOR: Paul Swift/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metals Analysis for South Tacoma Field Samples 92034595-92054619 (6 waters, 3 soils, 1 oil)

2. 4. 1. - 1021995

DATE: 03/10/92 PAGES: 20

AUTHOR: Linda K. Karsonovich/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Review of South Tacoma Field Samples for Pesticides/PCBs

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

2. 4. 1. - 1021994

DATE: 05/07/92 PAGES: 11

AUTHOR: Owen G. Loshbough/Kennedy/Jenks Consultants

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Cover letter and enclosed copy of the WTPH-418.1 for Heavy Petroleum Oils in Water and WTPH-418.1 for Heavy Petroleum Oils in Soil Matrix, and copies of control limits for these tests from Analytical Technologies, Inc.

2. 4. 1. - 1021993

DATE: 05/12/92 PAGES: 10

AUTHOR: J. Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation of TPH for the South Tacoma Field Project, Amsted Site, Samples 92194550, 921994551, 92194552 and 92194553

2. 4. 1. - 1021992

DATE: 05/21/92 PAGES: 33

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for South Tacoma Fields - AMSTED, Case No. 17888, SDG No. JK008, Volatile and Semi-Volatile Analyses

4. 1. - 1021991

DATE: 06/05/92 PAGES: 12

AUTHOR: John Alexander/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Metals Analysis for South Tacoma Field - Amsted Water Samples 92194550-92194553

2. 4. 1. - 1021990

DATE: 06/11/92 PAGES: 11

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for AMSTED, Case No. 19029, SDG No. MJJ700, Cyanide Analysis

2. 4. 1. - 1021989

DATE: 06/18/92 PAGES: 12

AUTHOR: J. Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation of BNA's for the South Tacoma Field Project, Samples 92194550, 92194551, 92194552 and 92194553

(TSWAM) COMM. BAY - S: TACOMA FIELD AMSTED REMOVAL A/R INDEX

2. 4. 1. - 1021988

DATE: 06/22/92 PAGES: 41

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for AMSTED, Case No. 19029, SDG No. JK017,
Volatiles, Pesticides and PCB Analyses

2. 4. 1. - 1021987

DATE: 07/01/92 PAGES: 11

AUTHOR: Donald Matheny/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Data Validation for AMSTED, SAS No. 7223J, SDG No. 92194550, PAH
Analyses

2. 4. 1. - 1021984

DATE: 09/18/92 PAGES: 1

AUTHOR: Christi Foster/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Notice of Improper Sample Submittal

2. 4. 1. - 1021983

DATE: 09/25/92 PAGES: 1

AUTHOR: Catherin York/ICF

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Notice of Improper Sample Submittal

2. 4. 1. - 1021986

DATE: 10/05/92 PAGES: 8

AUTHOR: J. Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation of BNA's for the Amsted Project, Water
Samples 92382001

2. 4. 1. - 1021981

DATE: 10/06/92 PAGES: 6

AUTHOR: J. Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation of TPH for the South Tacoma Field
Project, Amsted Site, Samples 92382001

2. 4. 1. - 1021980

DATE: 10/29/92 PAGES: 17

AUTHOR: Joe Blazeovich/EPA

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Report of Data Validation for STF Amsted Investigation, VOA
Analysis of Samples 92382000 and 92382001

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

2 4. 1. - 1021985
DATE: 11/12/92 PAGES: 10
AUTHOR: Donald Matheny/EPA
ADDRESSEE: Beth Feeley/EPA
DESCRIPTION: Comparison of Preliminary Split Sampling Data for ANSTED Industries
Property, Well# NMW-13, Kennedy/Jenks Consultants

SUB-HEAD: 2. 5. . Well Closure Report

2. 5. . - 1033004
DATE: 08/28/91 PAGES: 3
AUTHOR: Christine Psyk/EPA
ADDRESSEE: Edward Brosius/Amsted Industries
DESCRIPTION: Letter formally outlining the EPA's position on the July 1992, Well
Closure and Preliminary Fuel Investigation Report

2. 5. . - 0000001
DATE: 07/01/92 PAGES: 43
AUTHOR: Kennedy/Jenks/Cilton/Unknown
ADDRESSEE: Amsted Industries/Unknown
DESCRIPTION: Well Closure and Preliminary Fuel Investigation : Final Report :
Former Griffin Wheel Brass Foundry, Tacoma, Washington

SUB-HEAD: 2. 6. . Subsurface Investigation Report

6. . - 1021691
DATE: 07/01/92 PAGES: 226
AUTHOR: Unknown/Kennedy/Jenks Consultants
ADDRESSEE: Unknown/Amsted Industries
DESCRIPTION: Free-Phase Petroleum Product Investigation : Final Report

2. 6. . - 1033005
DATE: 07/21/92 PAGES: 1
AUTHOR: Owen G. Loshbough/Kennedy/Jenks Consultants
ADDRESSEE: Christine Psyk/EPA
DESCRIPTION: Cover letter for 6 copies of the Free-Phase Petroleum Product
Investigation Report

2. 6. . - 1021698
DATE: 08/21/92 PAGES: 6
AUTHOR: Beth Feeley/EPA
ADDRESSEE: Edward Brosius/Amsted Industries
DESCRIPTION: Comments on the July 1992, Final Report, Free-Phase Petroleum
Product Investigation

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

2. 6. . - 1021692

DATE: 12/01/92 PAGES: 312

AUTHOR: Unknown/Kennedy/Jenks Consultants

ADDRESSEE: Unknown/Amsted Industries

DESCRIPTION: Subsurface Investigation Former Griffin Wheel Brass Foundry : Final Report

2. 6. . - 1021697

DATE: 12/21/92 PAGES: 1

AUTHOR: Owen G. Loshbough/Kennedy/Jenks Consultants

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Transmittal letter for Subsurface Investigation Report

2. 6. . - 1021693

DATE: 01/11/93 PAGES: 3

AUTHOR: John Frerich/ICF Technology

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Cover letter and attached comments on the Subsurface Investigation Former Griffin Wheel Brass Foundry Final Report

2. 6. . - 1033007

DATE: 03/10/94 PAGES: 7

AUTHOR: Michael A. DuCharme/Kennedy/Jenks Consultants

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter recommending a preferred final remedial action for petrol hydrocarbons detected in soil and groundwater

2. 6. . - 1021694

DATE: 05/18/94 PAGES: 2

AUTHOR: John P. Frerich/ICF Technology, Inc.

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter re: Recommended Action for Heavy Fuel Action at Amsted Property

2. 6. . - 1033006

DATE: 05/18/94 PAGES: 2

AUTHOR: John Frerich/ICF Technology, Inc.

ADDRESSEE: Deborah Yamamoto/EPA

DESCRIPTION: Letter re: Recommended Action for Heavy Fuel Oil at Amsted Property

UB-HEAD: 2. 7. . Streamlined Risk Assessment

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

7. . - 1021695

DATE: 05/01/93 PAGES: 60

AUTHOR: Unknown/ICF Technology, Inc.

ADDRESSEE: Unknown/EPA

DESCRIPTION: Final Streamlined Risk Assessment for the Amsted Property Tacoma,
Washington Revision 0

2. 7. . - 1033003

DATE: 05/07/93 PAGES: 1

AUTHOR: John Frerich/ICF Technology, Inc.

ADDRESSEE: Beth Feeley/EPA

DESCRIPTION: Cover letter for 7 copies of the Final Streamlined Risk Assessment
for the Amsted Property Site

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

HEADING: 3. 0. . EPA OVERSIGHT

SUB-HEAD: 3. 1. . Work Plan/QAPP/Oversight Report

3. 1. . - 0000003

DATE: 01/13/92 PAGES: 10

AUTHOR: ICF Technology, Inc./Unknown

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Quality Assurance Plan for the South Tacoma Field Superfund Site
Amsted Property Removal

3. 1. . - 0000001

DATE: 02/01/92 PAGES: 20

AUTHOR: ICF Technology, Inc./Unknown

ADDRESSEE: EPA/Unknown

DESCRIPTION: Final Oversight Work Plan for the Amsted Property Investigation and
Removal Action

3. 1. . - 0000002

DATE: 03/23/92 PAGES: 9

AUTHOR: John P. Frerich/ICF Technology, Inc.

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter report updating EPA on oversight activities at the Amsted
Properties

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

INDEXING: 4. 0. . ENFORCEMENT

SUB-HEAD: 4. 1. . Correspondence

4. 1. . - 0000001

DATE: 05/09/91 PAGES: 1

AUTHOR: Philip Millam/EPA

ADDRESSEE: William F. Joyce, Ogden, Murphy and Wallace/Edward J. Brosius,

DESCRIPTION: Cover letter for Administrative Order on Consent for Amsted removal

4. 1. . - 0000002

DATE: 04/20/92 PAGES: 1

AUTHOR: Jeanne A. Pascal/EPA

ADDRESSEE: File/Unknown

DESCRIPTION: Memorandum to the file noting that the Administrative Record will be supplemented from time to time

SUB-HEAD: 4. 2. . Administrative Orders

4. 2. . - 0000001

DATE: 05/16/91 PAGES: 38

AUTHOR: Philip Millam/EPA

ADDRESSEE: William F. Joyce/Ogden Murphy Wallace

DESCRIPTION: Cover letter and attached Order on Consent for Necessary Response
Action pursuant to 42 USC 9606, South Tacoma Field Former Brass Foundry

4. 2. . - 0000002

DATE: 03/05/92 PAGES: 36

AUTHOR: Philip Millam/EPA

ADDRESSEE: Edward Brosius/Amsted Industries

DESCRIPTION: Cover letter and attached fully executed Amended Order on Consent

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

HEADING: 5. 0. . STATE COORDINATION

FB-HEAD: 5. 1. . Correspondence

1. . - 0000001

DATE: 08/08/91 PAGES: 2

AUTHOR: Peter C. Brooks/Washington State Dept. of Ecology (DOE)

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Letter re: comments on the Well Closure and Preliminary Field Investigation at the Amsted Property

1. . - 0000002

DATE: 08/23/91 PAGES: 1

AUTHOR: Christine Psyk/EPA

ADDRESSEE: Tom Todd/State of Washington Dept. of Ecology

DESCRIPTION: Letter re: Well Closure and Preliminary Field Investigation at the Amsted Property

1. . - 0000003

DATE: 11/14/91 PAGES: 6

AUTHOR: Peter C. Brooks/State of Washington Dept. of Ecology

ADDRESSEE: Christine Psyk/EPA

DESCRIPTION: Comments on Well Installation and Monitoring Draft Work Plan for the Former Griffin Wheel Brass Foundry, Tacoma, WA

1. . - 0000004

DATE: 03/05/92 PAGES: 1

AUTHOR: Beth Feeley/EPA

ADDRESSEE: Peter Brooks/State of Washington Dept. of Ecology

DESCRIPTION: Cover letter for the final work plan for the installation of additional monitoring wells on the Amsted Property

(TSWAM) COMM. BAY - S. TACOMA FIELD AMSTED REMOVAL A/R INDEX

DING: 6. 0. . PUBLIC PARTICIPATION

HEAD: 6. 1. . Fact Sheets

6. 1. . - 0000001

DATE: 05/10/91 PAGES: 4

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Fact Sheet : South Tacoma Field Superfund Site, Tacoma, Washington

6. 1. . - 0000002

DATE: 02/14/92 PAGES: 3

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Fact Sheet : South Tacoma Field Superfund Site, Tacoma, Washington

6. 1. . - 0000003

DATE: 03/01/92 PAGES: 11

AUTHOR: EPA/Unknown

ADDRESSEE: Unknown/Unknown

DESCRIPTION: Update on Hazardous Waste Cleanup Projects, Tacoma, Washington

STATEMENT OF WORK
FOR THE REMEDIAL DESIGN AND REMEDIAL ACTION
AT THE SOUTH TACOMA FIELD OPERABLE UNIT
OF THE COMMENCEMENT BAY SOUTH TACOMA CHANNEL SUPERFUND SITE

I. INTRODUCTION

This document sets forth the Scope of Work (SOW) for implementing the September 29, 1994, Record of Decision (ROD) for the South Tacoma Field (STF) Operable Unit for the Commencement Bay South Tacoma Channel Superfund site (the Site). It shall be the responsibility of the Settling Defendants to prepare, and submit for acceptance in accordance with Section III of this SOW documents for incorporating each element of this SOW. It shall also be the responsibility of the Settling Defendants' to undertake the work consistent with the National Contingency Plan (NCP), and to adhere to the requirements specified in this SOW, U.S. EPA's Superfund Remedial Design (RD) and Remedial Action (RA) Guidance, the ROD, the accepted Remedial Design/Remedial Action (RD/RA) Work Plan, and additional guidance provided by EPA.

The Settling Defendants are responsible for performing the work to implement the selected remedy. EPA shall review the Settling Defendants work products and schedules, and conduct oversight of the Settling Defendants activities throughout the performance of the work. The Settling Defendants shall assist EPA in conducting oversight activities.

II. DESCRIPTION OF THE REMEDIAL ACTION AND PERFORMANCE STANDARDS

The Settling Defendants shall design and implement the RA to meet the performance standards and specifications set forth in the ROD, the Unilateral Administrative Order (UAO), and this SOW.

A. Description and Implementation of the Remedial Action

The Settling Defendants shall design and implement the RA described in the September 29, 1994 Record of Decision, Commencement Bay South Tacoma Field Operable Unit. The major components of the RA shall be designed and implemented by the Settling Defendants as described below:

STF Soils

- Excavate and solidify contaminated soil (except for PCB contaminated soil) that exceeds hot spot concentration

levels. These levels are defined in Table 9-1 of the ROD. The soil shall be treated with Portland cement or other binding agents and water. The treated soil shall be spread on-site in six to twelve inch lifts and covered with a soil or, preferably, an asphalt cap. The Settling Defendants shall treat soil in an area that has been graded to manage surface water run-on and runoff. The Settling Defendants shall cover temporary soil stockpiles and use temporary control methods (e.g., silt fences and/or straw bales) to prevent contaminated runoff.

- Excavate soil contaminated with PCBs above 50 ppm and either incinerate the soil at an approved off-site incinerator or dispose of the soil off-site at a permitted chemical waste landfill. Soil contaminated with PCBs above 50 ppm was found in only one location, at Pioneer Builders Supply (one sample at 56 ppm). The Settling Defendants shall excavate soil containing PCB concentrations greater than 50 ppm in the vicinity of this sample location for either off-site incineration or disposal as described above.

Confirmation sampling during excavation may include, but is not limited to, hand augering, Hydro-punching, or borings at appropriate depths using field screening instruments (i.e., EPA approved field tests and/or instruments) to characterize areas with PCB concentrations greater than 50 ppm. However, laboratory confirmation shall be required for samples presumed to be below the cleanup levels.

- Excavate, consolidate and contain (cap) soils on-site which exceed site cleanup levels defined in Table 9-2 and fall below cleanup levels defined in Table 9-1 of the ROD. Areas to be targetted for consolidation and capping are generally identified in Figure 5-5 of the ROD. Other contaminants identified in Table 9-2 in soil which exceed Method A industrial cleanup levels shall also be excavated, consolidated and contained. Contaminated soil shall be capped with either a soil or asphalt cap.

Excavation of soil is not required beyond a depth of one foot. However, if after excavation of one foot of soil, an area is still contaminated above the soil cleanup levels in Table 9-2, (based on sampling conducted by the Settling Defendants), the Settling Defendants shall cap this area. At their discretion, the Settling Defendants may choose to continue excavating below a depth of one foot until contaminants in soil are below cleanup levels or until the MTCA

fifteen foot point of compliance is met. If cleanup levels are achieved, capping would not be required in that location.

The areas which shall be excavated, consolidated and capped shall be determined using the data and sampling grids developed during the Remedial Investigation (RI). The decision to excavate a sampling grid may be modified if additional samples collected in that grid indicate that chemicals in the soil are below the capping levels identified in Table 9-2 of the ROD. If the Settling Defendants want to use a statistical approach to determine areas needing excavation, consolidation, and capping, then statistical averaging of data shall be conducted on the additional data collected during RD/RA from the locations within the existing grid system. The Settling Defendants shall submit the statistical approach to EPA for review and approval.

Two types of caps, asphalt and soil, are allowed. The soil cap shall consist of a minimum of six inches of bank run gravel topped by a minimum of six inches of top soil and vegetation. Before placing the soil cap the area shall be cleared; and if required to control erosion, the subgrade shall be graded to improve drainage. The asphalt cap shall consist of a minimum of three inches of asphalt overlaying a minimum of six inches of crushed rock. A storm drain system if necessary, shall be designed in accordance with state and local standards for areas where asphalt caps are constructed.

To the maximum extent practical, the Settling Defendants shall place the asphalt cap in those areas where the highest concentrations of untreated contamination is located so that soil in these areas will be less likely to be disturbed during future development of the site. The Settling Defendants shall prepare an Operation and Maintenance Plan which shall include but is not limited to procedures for periodically inspecting and repairing (as necessary) capped areas and conducting repairs to maintain the integrity of the cap.

Submit a site development plan during RD identifying the locations where asphalt and soil caps would be used and discussing how future land development will be compatible with and maintain the integrity of the capped areas. The plan will also discuss how the caps could be modified or replaced during future development

activities using the EPA guidance, Geotechnical Systems for Structures on Contaminated Sites, March 1993.

- Conduct air monitoring during all excavation, treatment and earth-moving activities to verify that standards for airborne contaminant emissions are not exceeded in the work area or at the site boundary. Monitoring will include but not be limited to particulate dust meters. Air monitoring action levels shall be included as part of the Health and Safety Plan (HASP) and Work Plan.
- Develop a plan for implementing institutional controls that may include, but are not limited to: deed restrictions, physical access restrictions, warning signs, safety measures and educational programs to prohibit activities that may lead to exposure to contaminants.
- Monitor groundwater at selected on-site and off-site wells, including wells in the vicinity of the petroleum hydrocarbon contamination detected at the Amsted site. The wells to be sampled will be determined during RD. Biannual monitoring shall be conducted with one sampling event occurring in April and another during October of each year. This schedule should account for both the wet season and dry seasons. The contaminants to be analyzed for are dependent upon previous detections, proximity to areas requiring capping or treatment, and those shown for groundwater in Table 9-4 in the ROD. The contaminants to be analyzed for at the Amsted Property will include total petroleum hydrocarbons and polycyclic aromatic hydrocarbons. The contaminants to be monitored offsite will be inorganics that will be presented in the SAP. EPA will use the monitoring data to assess trends in groundwater quality. EPA will review the monitoring program at the five year review to determine whether additional actions are required or whether the monitoring program should be modified or discontinued.

Pioneer Builders Supply

- Implement air sparging and in situ vapor extraction in the vicinity of Pioneer Builders Supply to clean up contaminated subsurface soil and groundwater to below cleanup levels identified in Table 9-4 of the ROD.
- Collect additional data to define the extent of groundwater contamination. The Settling Defendants shall install groundwater monitoring wells to collect additional data during RD to aid in the pilot study for the air sparging and in situ vapor extraction system

(see D. below). These data shall be used to define the vertical and horizontal extent of the plume. The Settling Defendants shall install a minimum of three additional monitoring wells. The location of additional groundwater monitoring wells shall be approved by EPA during RD. The procedures used to locate the monitoring wells may include the use of "Hydro-punching" to collect soil and groundwater samples. This method may prove more cost effective, timely, and reduce the number of new monitoring wells.

- Develop a plan for implementing, and implement institutional controls to prohibit drinking water use of contaminated groundwater that is above clean up levels.
- Conduct monitoring for evaluation of the treatment system, compliance with cleanup levels and to determine whether additional actions will be required.

Tacoma City Light Dry Wells

- Excavate all soil from dry wells identified during the RI with PCB concentrations above 50 ppm or endrin concentrations above 0.13 ppm and transport the soil off-site for incineration.
- Excavate all soil from dry wells with PCB, PAH and other chemical concentrations above the MTCA Method B residential cleanup levels and transport these soils to an off-site permitted hazardous waste landfill for disposal.
- Conduct confirmation sampling to determine that compliance with MTCA Method B residential cleanup levels have been achieved.
- Backfill the dry wells with clean soil and install catch basins if necessary.

B. Performance Standards

The Settling Defendants shall meet all Performance Standards, as defined in the UAO including the standards set forth in the attached ROD.

Performance standards shall include cleanup standards, substantive requirements, criteria, or limitations including all Applicable or Relevant and Appropriate Requirements (ARARS) set forth in the ROD, SOW, and/or UAO. In addition, the Settling Defendants must meet all performance standards

identified in the Remedial Design not addressed in the above documents, but which are identified, or become necessary during the Remedial Design period of the project.

Performance Standards which meet all chemical-specific, location-specific and action-specific ARARs for this site are presented in Tables 9-1, 9-2, 9-3, 9-4 and 9-5 of the ROD. The ROD is included as an Appendix of the UAO.

C. Compliance Testing

The Settling Defendants shall perform compliance testing to ensure that all Performance Standards are met. The Settling Defendants shall prepare a Performance Standards Verification Plan as described in Section VII, Task IV of this SOW. The Performance Standards Verification Plan will be used to evaluate treated soil for compliance with the Land Disposal Restrictions as discussed in 40 C.F.R. Part 268, compliance with cap design requirements, and evaluate effectiveness of the air sparging and soil vapor extraction systems for compliance with cleanup levels. After demonstration of compliance with Performance Standards, the Settling Defendants shall conduct long term monitoring of the site groundwater, including monitoring of the petroleum hydrocarbon contamination found at the Amsted property.

D. Pilot Study

A pilot study will be necessary to determine the final design of the air sparging and soil vapor extraction systems. The pilot system shall be designed and constructed such that it can be incorporated into the final extraction/treatment system. If the contaminated ground water plume is determined to be expanding or migrating in spite of this remedial action, then additional actions (system expansion or hydraulic control) shall be required.

E. Accuracy and Completeness

The Settling Defendants shall perform and shall assume all responsibility for the accuracy and completeness of the design work and services for the described project in accordance with this SOW and the UAO. The Settling Defendants shall be responsible for the correction of any design errors or deficiencies in the plans or specifications submitted pursuant to this SOW. Should design changes as a result of revised criteria be required, the Settling Defendants may be instructed to perform the necessary redesign work.

In the event that discrepancies, omissions, or other errors in the drawings and specifications are discovered after final design document submission, the Settling Defendants shall revise the specifications and/or contract drawings or prepare sketches and provide the necessary data.

It shall be the responsibility of the Settling Defendants to check and coordinate all project data prior to submission to EPA. Deficiencies, ambiguities, conflicts and inconsistencies shall be rectified by the Settling Defendants prior to submittal of documents. A letter of transmittal shall certify that all documents have been checked and coordinated with EPA prior to submittal. The letter shall be signed by a principal of the Settling Defendants or the RD firm.

III. ROLE OF EPA

EPA ACCEPTANCE

EPA acceptance of RA and RD contractors, plans, specifications, processes, and other submittals within the context of the UAO is administrative in nature to allow the Settling Defendants to proceed to the next step. Acceptance does not imply any warranty of performance or that the remedy, when constructed, will meet performance standards or will function properly and be accepted.

Where applicable, EPA acceptance shall be made in consultation with the Washington State Department of Ecology.

IV. THE SETTLING DEFENDANTS KEY PERSONNEL

A. DESIGNATION OF PROJECT COORDINATOR

Within 10 days of issuance of the UAO, the Settling Defendants shall submit in writing, for EPA acceptance, the name, title, and qualifications of the proposed Project Coordinator, pursuant to the procedures in paragraph 86 of the UAO.

The Project Coordinator shall oversee the coordination of the entire project design and shall be capable of administering all instructions from EPA and obtaining answers to all questions from EPA during and following completion of the design work. During the implementation of RD/RA work under the Decree, the Project Coordinator shall keep in close liaison with the EPA Remedial Project Manager (RPM).

B. REVIEW AND ACCEPTANCE OF SUPERVISING CONTRACTOR

Within 20 days of the issuance of the UAO, the Settling Defendants shall submit the name and qualifications of the Project Manager for acceptance by EPA based on project-specific qualifications and professional competence, pursuant to the procedures in Section IX, paragraph 46 of the UAO. The Project Manager may come from the Settling Defendants' own staff or through a contractual relationship with a private consulting entity. In either case, the factors to be considered in EPA acceptance shall include professional and ethical reputation, professional registration, demonstrated design experience and qualifications specifically required for the project, sufficient capacity (Professional, Technical, and Support staff) to accomplish the project within the required schedule, and sufficient business background and financial resources to provide uninterrupted services throughout the life of the project.

The submitted information about the Project Manager shall include a written statement of qualification in sufficient detail to allow EPA to make a full and timely evaluation.

C. DESIGNATION OF INDEPENDENT QUALITY ASSURANCE TEAM (IQAT)

Within 30 days of issuance of the UAO, the Settling Defendants shall submit the names, titles and qualifications for acceptance by EPA based on project-specific qualifications and professional competence, of the IQAT to oversee design and construction of the remedy.

V. VERIFICATION OF EXISTING CONDITIONS

The Settling Defendants are responsible for making the necessary field visits to assess existing conditions and to obtain such detailed information as is required to complete the design. All data shown on drawings shall be verified by the Settling Defendants, and the Settling Defendants shall obtain all data as required to ensure the complete and proper design of the project.

VI. CONSISTENCY WITH FEDERAL REQUIREMENTS

Performance of this project shall be completed consistent with the ROD, NCP, and CERCLA, as amended. The Settling Defendants shall ensure that the project is in compliance with the requirements of federal, state, and local clean air, clean water, and hazardous and solid waste disposal standards. The Settling Defendants shall ensure that the final design package(s) submitted to EPA are consistent with

the technical requirements of all applicable or relevant and appropriate federal and state environmental regulations.

VII. SCOPE OF THE REMEDIAL DESIGN AND REMEDIAL ACTION

The specific scope of this work shall be documented by the Settling Defendants in documents described in this SOW. Plans, specifications, submittals, and other deliverables shall be subject to EPA review and acceptance in accordance with Section XIV of the UAO.

The RD and RA shall consist of the following tasks.

TASK I - REMEDIAL DESIGN

The RD shall provide the technical details for implementation of the RA in accordance with currently accepted environmental protection technologies and standard professional engineering and construction practices. The design shall include plans and specifications in sufficient detail to construct, operate, and maintain the RA. Planning documents are submitted as drafts, and after EPA reviews and supplies comments on the documents, the plans are revised and resubmitted for EPA acceptance. Design documents are submitted by the Settling Defendants, and after EPA reviews and supplies comments on the documents, responses to the comments are submitted to the EPA, and comments are incorporated into the subsequent design submittal.

A. Remedial Design Planning

1. RD Work Plan

The Settling Defendants shall submit an RD Work Plan to EPA for review and acceptance. The Work Plan shall document the overall management strategy for performing the RD. The Work Plan shall include a description of additional data collection and evaluation activities to be performed, and the plans and specifications to be prepared. A schedule for completion of each major activity and submission of each deliverable shall also be included. If data collection shall be undertaken, a Sampling and Analysis Plan including Field Sampling Plan, Quality Assurance Project Plan, and a Health and Safety Plan shall be prepared. Previous submissions may be modified or referenced.

Specifically, the Work Plan shall present the following:

- a. A statement of the objectives of the RD/RA.

- b. Tentative formation of the design team, including the responsibility and authority of all organizations and key personnel involved with the implementation of the UAO.
- c. A list and description of the tasks to be performed, information needed for each task, information to be produced during and at the conclusion of each task, and a description of the work products that shall be submitted to EPA.
- d. A schedule for the design with specific dates for completion of each required activity and submission of each deliverable required by the UAO and this SOW, including timing of monthly reports to EPA and meetings and presentations to EPA at the conclusion of each major phase of the RD/RA.
- e. A data/document management plan. The data management plan shall address the requirements for tracking, sorting, and retrieving the data along with an identification of the software to be used, minimum data requirements, data format and backup data management. Groundwater data shall be submitted in electronic format according to EPA Region 10 Order R10 7500.1. The plan shall address both data management and document control for activities conducted during the RD/RA.

2. Sampling and Analysis Plan

The Settling Defendants shall submit a Sampling and Analysis Plan (or plans) (SAP(s)) that shall describe sample collection and analytical activities during the Pilot Study at Pioneer Builders Supply (see Section 4 below), during sampling at the Former Swamp/Lakebed, and during RA. The sampling collection and analytical activities shall be conducted in accordance with technically acceptable protocols and the data generated shall meet established Data Quality Objectives (DQOs). The SAP(s) shall include a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall describe the sampling and data-gathering methods that shall be used on the project. It shall include sampling objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs. The DQOs shall, at a minimum, reflect use of

analytical methods for obtaining data of sufficient quality to meet National Contingency Plan requirements as identified at 300.435 (b). In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, and data reduction, validation, and reporting.

The Settling Defendants shall demonstrate in advance and to EPA's satisfaction that each laboratory it may use is qualified to conduct the proposed work. EPA may require that the Settling Defendants submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specification, and laboratory analyses of performance samples (blank and/or spike samples). In addition, EPA may require submittal of data packages equivalent to those generated by the EPA Contract Laboratory Program (CLP).

The SAP(s) shall also describe soil sampling efforts to determine the extent of STF soil hot spots during remediation, to determine treatment (solidification) mixtures; to determine the area of the site to be capped during RA; and long term monitoring of site groundwater, storm water, surface water and sediments quality during RA.

3. Health and Safety Plan

The Settling Defendants shall submit a Health and Safety Plan for the Pilot Study at Pioneer Builders Supply (see Section 4 below) and for sampling activities in the Former Swamp/Lakebed during RD prepared in conformance with the Settling Defendants' health and safety program, and in compliance with Occupational Safety and Health Administration (OSHA) regulations and protocols. The Health and Safety Plan shall include a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and provisions for site control. EPA will not accept the Settling Defendants' Health and Safety Plan, but rather EPA will review it to verify that necessary elements are included, and that the plan provides for the protection of human health and the environment. The Remedial Investigation/Feasibility Study (RI/FS) Health and Safety Plan may be modified for the RD.

4. Pilot Study Work Plan

The Settling Defendants shall prepare a Pilot Study Work Plan for EPA review and acceptance. A pilot study will be necessary for preparing the final design and plans and

specifications of the air sparging and soil vapor extraction systems. The pilot system shall be designed and constructed such that it can be incorporated into the final extraction/treatment system.

The Pilot Study Work Plan shall describe the technology to be tested, and test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, and residual waste management. The Pilot Study Work Plan shall also describe pilot plant installation and start-up, and operating conditions to be tested. If testing is to be performed off-site, permitting requirements shall be addressed. A schedule for performing the pilot study shall be included with specific dates for the tasks, including, but not limited to, the procurement of contractors and the completion of sample collection, performance, sample analysis, and report preparation. The Work Plan shall describe the treatment process and the steps necessary to achieve the Performance Standards for the Site. Review and acceptance by EPA shall mean only that EPA considers the proposed technology, vendor, and study approach appropriate for the remedy selected for the applicable portions of the Site. The Pilot Study Work Plan shall also address how the Settling Defendants propose to meet discharge requirements for all treated material, air, water and ejected effluents. Additionally, the Work Plan shall also explain the proposed final treatment and disposal of all material generated by the proposed treatment system. Substantive permitting requirements shall also be addressed. If the pilot system becomes the final system, the O & M plan shall be produced according to Task III in this SOW.

5. Site Development Work Plan

If it is the Settling Defendants' intent to develop portions of the site, including some of the capped areas, as an industrial park, future development must be designed and constructed to maintain the integrity of the capped areas. The Settling Defendants shall submit a site development plan during RD identifying the locations where asphalt and soil caps would be used and discussing how future land development will be compatible with and maintain the integrity of the capped areas. The plan will also discuss how caps could be modified or replaced during future development activities using the EPA guidance, Geotechnical Systems for Structures on Contaminated Sites, March 1993..

6. Plan for Implementation of Institutional Controls

Institutional controls shall be implemented in several forms at the site. Because institutional controls can be

difficult to implement, the Settling Defendants shall submit a plan for implementation of institutional controls to EPA for review and approval.

STF Soils: Institutional controls shall include, but are not limited to: deed restrictions, physical restrictions (e.g., fencing, barriers), warning signs, safety measures, and educational programs.

The Settling Defendants shall place deed restrictions on all properties within the site boundary as defined in the RI report where soil contamination exceeds the MTCA residential cleanup levels as shown in Table 9-3 of the ROD. The deed restrictions shall be submitted to EPA for review and approval and shall state that, as long as soil contamination exceeds the MTCA residential cleanup levels, land use for these areas is restricted to industrial purposes as defined by the Washington Model Toxics Control Act (WAC 173-340), as amended, and consistent with the city zoning code. The deed restrictions shall also include information on the levels and location of contamination found on the property(ies), and whether any remedial action (e.g., treatment or capping) was taken on the property. It shall also discuss measures that must be taken to minimize soil disturbances during site development, routine maintenance or repair activities; procedures for the proper disposal of soil; and procedures to maintain the integrity of the selected remedy. The Settling Defendants shall notify EPA and Ecology of any future development activities that result in changes to the current industrial use of the site so that additional cleanup measures can be identified and implemented as appropriate.

The Settling Defendant shall also include a Future Site Safety Implementation Plan which includes educational programs and safety procedures for future (post closure) excavations so that contact with contaminated soil is minimized, and so that such soil is appropriately disposed. These programs and safety procedures shall address significant site development projects as well as routine utilities installation and maintenance projects.

Educational programs shall be implemented and materials distributed to inform the community (e.g. nearby residents and current and future on-site workers) about the hazards remaining at the site. The educational information distributed to the community shall explain that the cleanup remedy is designed to protect industrial workers, discuss the remaining chemical and

physical hazards at the site and discourage trespassing and the unauthorized use of the site.

Pioneer Builder's Supply: The Settling Defendants shall implement institutional controls restricting groundwater use to non-drinking water purposes in the vicinity of Pioneer Builders Supply as part of the selected remedy. The restricted use area shall be defined during RD using data collected by the Settling Defendants as part of the pilot study, including data from new and existing groundwater monitoring wells. This restriction shall continue until groundwater cleanup levels are achieved throughout the contaminant plume and MTCA cumulative risk requirement of risks no greater than 1 in 100,000 and a Hazard Index no greater than 1 are achieved.

Upon acceptance of the RD Work Plan by EPA, the Settling Defendants will implement the Work Plan in accordance with the RD schedule contained therein. Such implementation shall include EPA review and/or approval of plans, specifications, submittals, and other deliverables in accordance with Section XIV of the UAO. The design documents shall be submitted to EPA at two phases during preparation, a Preliminary Design and a Prefinal/Final Design.

B. Preliminary Design

45 days after EPA final acceptance of the RD Work Plan, the Settling Defendants shall submit the Preliminary Design. The Preliminary Design shall begin with the initial design and shall end with the completion of approximately 30 percent of the design effort. During the Preliminary Design, required field activities shall be performed. The technical requirements of the RA shall be addressed and outlined so that they may be reviewed to determine if the final design will provide an effective remedy. Supporting data and documentation shall be provided with the design documents. EPA acceptance of the Preliminary Design is required before proceeding with further design work, unless specifically authorized by EPA.

EPA's comments on the Preliminary Design shall be addressed in a memorandum which either responds to questions on the design or indicates how the comments shall be incorporated into the Final Design. Acceptance of the Preliminary Design will not occur until after review of responses to comments. Documents in the submittal which are "final documents" may require revision and resubmission prior to acceptance.

In accordance with the design management schedule established in the accepted RD Work Plan, the Settling Defendants shall submit to EPA the Preliminary Design submittal which shall consist of the following:

1. Results of Data Acquisition Activities

Data gathered during the project planning phase shall be compiled, summarized, and submitted along with an analysis of the impact of the results on design activities. This includes results of the pilot study. In addition, surveys, if necessary, conducted to establish topography, rights-of-way, easements, and utility lines shall be documented. Utility requirements and acquisition of access, through purchases or easements, that are necessary to implement the RA shall also be discussed.

2. Design Criteria Report

The concepts supporting the technical aspects of the design shall be presented in this report. Specifically, the Design Criteria Report shall include the preliminary design assumptions and parameters, including, but not limited to:

- a. Waste characterization
- b. Estimated volume of each media requiring treatment
- c. Treatment schemes (including all media and by-products)
- d. Influent and effluent qualities
- f. Design restrictions
- g. Materials and equipment
- h. Performance Standards
- i. Long-term monitoring requirements

The Design Criteria Report shall include as appendices:

- a. Sample calculations (one example presented and explained clearly for significant or unique design calculations; and,
- b. Derivation of equations essential to understanding the report.

3. Preliminary Plans and Specifications

The Settling Defendants shall submit an outline of the required drawings, including preliminary sketches and layouts, describing conceptual aspects of the design, unit processes, etc. In addition, an outline of the required specifications, including Performance Standards, shall be submitted. Construction drawings shall reflect organization

and clarity, and the scope of the technical specifications shall be outlined in a manner reflecting the final specifications.

4. Plan for Satisfying Permitting Requirements

Remedial actions shall be performed in accordance with the substantive requirements of all applicable federal and state laws and regulations identified in the ROD, the UAO, or this SOW. Any off-site disposal shall be in compliance with the policies stated in the Procedure for Planning and Implementing Off-site Response Actions (Federal Register, Volume 50, Number 214, November, 1985, pages 45933 - 45937) and Federal Register, Volume 55, Number 46, March 8, 1990, page 8840, and the National Contingency Plan, Section 300.440. The plan shall identify the off-site disposal permits that are required, an estimate of the time required to process the permit applications, and a schedule for submittal of the permit applications.

5. Pilot Study Final Report

A final report of the pilot study will be required. This report shall provide the results of the pilot test as specified in the pilot test work plan. In addition, this report shall document that the system will proceed to full scale design, any design modifications that will be necessary or whether additional actions (hydraulic control, etc.) shall be required.

6. Draft Construction Schedule

The Settling Defendants shall develop a Draft Construction Schedule for construction and implementation of the RA which identifies timing for initiation and completion of all critical path tasks.

7. Draft Performance Standard Verification Plan as Described in Task IV.

C. Prefinal Design

The Settling Defendants shall submit the Prefinal Design 45 days after receiving EPA comments on the preliminary design in accordance with the accepted design management schedule. The Settling Defendants shall address comments generated from the Preliminary Design Review and show any modification of the design as a result of incorporation of the comments. Essentially, the Prefinal Design shall function as the draft version of the Final Design. The following items shall be submitted with or as part of the Prefinal Design:

1. Prefinal Design Analyses

The selected design shall be presented along with an analysis supporting the design approach. Design calculations shall be included.

2. Prefinal Plans and Specifications

A complete set of prefinal construction drawings and specifications shall be submitted. Plans and specifications shall conform with the Construction Specifications Institute Master Format.

3. Prefinal Construction Schedule

The Settling Defendants shall submit a final construction schedule to EPA for acceptance.

5. Prefinal Performance Standard Verification Plan

D. Final Design

Within 30 days after EPA approves the Prefinal Design, the Final Design shall be submitted along with a memorandum indicating how the Prefinal Design comments were incorporated into the Final Design. The quality of the final design shall be such that it will be the basis for a bid package which invites contractors to submit bids for the construction project. The Final Design documents shall be stamped, signed and dated by a Professional Engineer registered in the State of Washington. EPA written acceptance of the Final Design is required before initiating the RA, unless specifically authorized by EPA. The following items shall be submitted with or as part of the Final Design:

1. Complete Design Analyses

The selected design shall be presented along with an analysis supporting the design approach. Design calculations shall be included.

2. Final Plans and Specifications

A complete set of final construction drawings and specifications, with sufficient detail for constructing, operating, and maintaining the RA, shall be submitted. Plans and specifications shall conform with the Construction Specifications Institute Master Format.

3. Final Construction Schedule

The Settling Defendants shall submit a final construction schedule to EPA for acceptance.

4. Draft Operation and Maintenance (O&M) Plan

A draft O&M Plan, as described in Task III shall be submitted. The O&M Plan shall be revised following implementation of the RA.

5. Final Performance Standard Verification Plan

6. Construction Cost Estimate

A definitive estimate within +15 percent to -5 percent of actual construction costs), and based on existing information and reasonable assumptions regarding conditions, shall be submitted. The purpose of the cost estimate is to ensure that the Settling Defendants have financial resources necessary to implement the Remedial Action.

TASK II - REMEDIAL ACTION

Remedial Action shall be performed by the Settling Defendants to implement the response actions selected in the ROD, as designed in accordance with Task I of this SOW.

A. Remedial Action Planning

Concurrent with the submittal of the Prefinal/Final Design, the Settling Defendants shall submit a draft RA Work Plan, which will include a Construction Management Plan, a Construction Quality Assurance Plan, and a Construction Health and Safety Plan/Contingency Plan.

Upon acceptance of the Final Design and the RA Work Plan, the Settling Defendants shall implement the RA in accordance with the RA Work Plan. Significant field changes to the RA as set forth in the RA Work Plan and Final Design shall not be undertaken without the approval of EPA. The RA shall be documented in enough detail to produce as-built construction drawings after the RA is complete. Deliverables shall be submitted to EPA for review and acceptance in accordance with Section III of this SOW. Review and/or acceptance of submittals does not imply acceptance of later submittals that have not been reviewed, or that the remedy, when constructed, will meet Performance Standards.

1. RA Work Plan

A Work Plan which provides a detailed plan of action for completing the RA activities shall be submitted to

EPA for review and acceptance. The objective of this Work Plan is to provide for the safe and efficient completion of the RA. The Work Plan shall include a comprehensive description of the work to be performed and the Final Construction schedule for completion of each major activity and submission of each deliverable.

Specifically, the Work Plan shall present the following:

- a. A detailed description of the work to be performed and a description of the work products to be submitted to EPA. This includes the deliverables set forth in the remainder of Task II.
- b. A schedule for completion of each required activity and submission of each deliverable required by the UAO, including those in this SOW.
- c. A Construction Management Plan shall be developed to indicate how the construction activities are to be implemented and coordinated with EPA during the RA. The Settling Defendants shall designate a person to be an RA Coordinator and its representative on-site during the RA, and identify this person in the Plan. This Plan shall also include the following:
 - i. Identification of the RA Team for construction management, including the key personnel, descriptions of duties, and lines of authority;
 - ii. A description of the roles and relationships of the Settling Defendants, Project Coordinator, Resident Engineer, Independent Quality Assurance Team, Supervising Contractor, and the RA Construction Contractor; and,
 - iii. A plan for the administration of construction changes to include EPA review of changes that may impact the implementation of the ROD in accordance with the UAO and attachments.
- d. The Settling Defendants shall develop and implement a Construction Quality Assurance Program to ensure, with a reasonable degree of certainty, that the completed RA meets or exceeds all design criteria, plans and specifications, and Performance Standards. The Construction Quality Assurance Program shall incorporate relevant

provisions of the Performance Standards Verification Plan (see Task IV). At a minimum, the Construction Quality Assurance Plan shall include the following elements:

- i. A Construction Quality Control Assurance Program. This program will describe the actions that shall be taken so that the RA attempts to meet or exceed the requirements described in plans and specifications and Performance Standards. The Construction Quality Control Assurance Program also will include:
- ii. A description of the quality control organization, including a chart showing lines of authority, identification of the members of the Independent Quality Assurance Team (QAT), and acknowledgment that the QAT will implement the control system for all aspects of the work specified and shall report to the project coordinator and EPA. The IQAT members shall be representatives from testing and inspection organizations and/or the Supervising Contractor and shall be responsible for the QA/QC of the RA. The members of the IQAT shall have a good professional and ethical reputation, previous experience in the type of QA/QC activities to be implemented, and demonstrated capability to perform the required activities. They shall also be independent of the construction contractor.
- iii. The name, qualifications, duties, authorities, and responsibilities of each person assigned a QC function.
- iv. Description of the observations and control testing that will be used to monitor the construction and/or installation of the components of the RA. This includes information which certifies that personnel and laboratories performing the tests are qualified and the equipment and procedures to be used comply with applicable standards. Any laboratories to be used shall be specified. Acceptance/rejection criteria and plans for implementing corrective measures shall be addressed.

- v. A schedule for managing submittals, testing, inspections, and any other QA function (including those of contractors, subcontractors, fabricators, suppliers, purchasing agents, etc.) that involve assuring quality workmanship, verifying compliance with the plans and specifications, or any other assessing achievement of QC objectives. Inspections shall verify compliance with all environmental requirements described in the RA or RD documents and include, but not be limited to, air quality and emissions monitoring records and waste disposal records, etc.
 - vi. Reporting procedures and reporting format for QA/QC activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.
- e. The Settling Defendants shall coordinate preparation of a Construction Health and Safety Plan/Contingency Plan in compliance with OSHA regulations and protocols. The Construction Contractor shall prepare the Construction Health and Safety Plan and assist the Settling Defendants in preparing the Contingency Plan. The Settling Defendants will submit the Construction Health and Safety Plan and the Contingency Plan to EPA. The Construction Health and Safety Plan shall include a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. EPA will not accept the Construction Health and Safety Plan/Contingency Plan, but rather EPA will review it to verify that all necessary elements are included, and that the plan provides for the protection of human health and the environment. This plan shall include a Contingency Plan and incorporate Air Monitoring and Spill Control and Countermeasures Plans if determined by EPA to be applicable for the Site. The Contingency Plan is to be written for the on site construction workers and the local affected population. It shall include the following items:
- i. Name of person who will be responsible in the event of an emergency incident.

- ii. Plan for initial site safety indoctrination and training for all onsite remedial action employees, name of the person who will give the training and the topics to be covered.
- iii. A list of the first aid and medical facilities including, location of first aid kits, names of personnel trained in first aid, a clearly marked map with the route to the nearest medical facility, necessary emergency phone numbers conspicuously posted at the job site (i.e., fire, rescue, local hazardous material teams, National Emergency Response Team, etc.)
- iv. Plans for protection of public and visitors to the job site.
- v. Air Monitoring Plan which incorporates the following requirements:
 - a) Air monitoring shall be conducted both on-site and at the perimeter of the site. The chemical constituents that were identified during the Risk Assessment shall serve as a basis of the sampling for and measurement of pollutants in the atmosphere. The Settling Defendants shall identify these contaminants and the detection and notification levels required in Paragraph 4 below. Air monitoring shall include personnel monitoring, on-site area monitoring, and perimeter monitoring.
 - b) Personnel Monitoring shall be conducted according to OSHA and National Institute for Occupational Safety and Health (NIOSH) regulations and guidance.
 - c) On site Area Monitoring shall consist of continuous real-time monitoring performed immediately adjacent to any waste excavation areas, treatment areas, and any other applicable areas when work is occurring in RA areas of the Site. Measurements shall be taken in the breathing zones of personnel and immediately upwind and downwind of the work areas. Equipment shall include the following, at a minimum: organic vapor meter, explosion meter, particulate monitoring equipment, and on-site windsock.

d) Perimeter Monitoring shall consist of monitoring airborne contaminants at the perimeter of the site to determine whether harmful concentrations of toxic constituents are migrating off-site. EPA approved methods shall be used for sampling and analysis of air at the site perimeter. The results of the perimeter air monitoring and available information on estimates of wind speed and direction shall be used to assess the potential for off-site exposure to toxic materials. The air monitoring program shall include provisions for notifying nearby residents, local, state and federal agencies in the event that unacceptable concentrations of airborne toxic constituents are migrating off-site. The Settling Defendants shall report detection of unacceptable levels of airborne contaminants to EPA.

vi. Plans for dust suppression in areas of RA. The policy, "no visible dust" shall be used as the trigger for performing dust suppression.

3. A Transport and Disposal Plan

The Settling Defendants shall prepare a Transport and Disposal Plan in accordance with the Off-site Rule for contaminated material that is to be removed, transported and disposed at an approved RCRA facility. The Settling Defendants shall provide written notice prior to any out-of-state shipment of waste material;

B. Remedial Action Construction

The Settling Defendants shall implement the RA as detailed in the accepted final design. The following activities shall be completed in constructing the RA.

1. Preconstruction Conference

A Preconstruction Conference shall be held after selection of the Construction Contractor but before initiation of construction. This conference shall include the Settling Defendants and federal, state and local government agencies and shall:

- a. Define the roles, relationships, and responsibilities of all parties involved in the RA;
- b. Review methods for documenting and reporting inspection data;
- c. Review methods for distributing and storing documents and reports;
- d. Review work area security and safety protocols;
- e. Review the Construction Schedule;
- f. Conduct a site reconnaissance to verify that the design criteria and the plans and specifications are understood and to review material and equipment storage locations.

The Settling Defendants shall document the Preconstruction Conference, including names of people in attendance, issues discussed, clarifications made, special instructions issued, etc. The Settling Defendant shall transmit the minutes of the meeting to EPA and all parties in attendance.

2. Prefinal Construction Inspection

Upon preliminary project completion, the Settling Defendants shall notify EPA for the purpose of conducting a Prefinal Construction Inspection. Participants should include the Project Coordinators, Supervising Contractor, Construction Contractor, and EPA. The Prefinal Inspection shall consist of a walk-through inspection of the entire project site. The objective of the inspection is to determine whether the construction is complete and consistent with the UAO, the SOW and the ROD. Any outstanding construction items discovered during the inspection shall be identified and noted. Additionally, treatment equipment shall be operationally tested by the Settling Defendants. The Settling Defendants shall state that the equipment has performed to effectively meet the purpose and intent of the specifications. Retesting shall be completed where deficiencies are revealed. The Prefinal Construction Inspection Report shall be submitted by the Settling Defendants which outlines the outstanding construction items, actions required to resolve the items, completion date for the items, and an anticipated date for the Final Inspection.

3. Final Construction Inspection

Upon completion of all outstanding construction items, the Settling Defendants shall notify EPA for the purpose of conducting a Final Construction Inspection. The Final Construction Inspection shall consist of a walk-through inspection of the entire project site. The Prefinal Construction Inspection Report shall be used as a check list with the Final Construction Inspection focusing on the outstanding construction items identified in the Prefinal Construction Inspection. All tests that were originally unsatisfactory shall be conducted again. Confirmation shall be made during the Final Construction Inspection that all outstanding items have been resolved. Any outstanding construction items discovered during the inspection still requiring correction shall be identified and noted. If any items are still unresolved, the inspection shall be considered to be a Prefinal Construction Inspection requiring another Prefinal Construction Inspection Report and subsequent Final Construction Inspection.

4. Final O & M Plan.

Within thirty (30) days of the Prefinal Construction Inspection, the Settling Defendants shall submit the final O & M Plan. The final O & M plan shall incorporate comments submitted on the draft plan and required changes resulting from construction.

5. Remedial Action Report

As provided in Section IX of the UAO, within 30 days after the Settling Defendants conclude that the RA has been fully performed and the Performance Standards have been attained, the Settling Defendants shall so certify state to the United States and shall schedule and conduct a pre-certification inspection to be attended by EPA and the Settling Defendants. If after the pre-certification inspection the Settling Defendants still believe that the RA has been fully performed and the Performance Standards have been attained, the Settling Defendants shall submit a RA Report to EPA in accordance with Section IX of the UAO. The RA Report shall include the following:

- a. A copy of the Final Construction Report which shall include:

- (1). Brief description of how outstanding items noted in the Prefinal Inspection were resolved;
- (2). Explanation of modifications made during the RA to the original RD Work Plan and plans and specifications and why these changes were made;
- (3). As-built drawings;
- (4). Synopsis of the construction work defined in the SOW and certification that the construction work has been completed.

- b. Synopsis of the work defined in this SOW and a demonstration in accordance with the Performance Standards Verification Plan that Performance Standards have been achieved;
- c. Certification that the RA has been completed in full satisfaction of the requirements of the UAO, and;
- d. A description of how the Settling Defendants will implement any remaining part of the EPA accepted Operation and Maintenance Plan.

After EPA review, the Settling Defendants shall address all comments and submit a revised report. As provided in Section IX of the UAO, the RA shall not be considered complete until EPA accepts the RA Report.

TASK III - OPERATION AND MAINTENANCE

Operation and Maintenance (O&M) shall be performed in accordance with the accepted O&M Plan. The O&M Plan shall cover the operation of the treatment systems and post remedial action activities including groundwater, storm water, surface water, and sediment monitoring, and cap inspection and maintenance.

A. Operations and Maintenance Plan.

The Settling Defendants shall submit an O&M Plan for EPA review and approval which shall include the following elements where applicable:

1. Start-up procedures, operation, troubleshooting, training, and evaluation activities that shall be

carried out by the Construction Contractor and monitored by the Settling Defendants.

2. Equipment start-up and operator training;
 - a. Technical specifications governing treatment systems;
 - b. Requirements for providing appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up and operation of the systems; and,
 - c. Schedule for training personnel regarding appropriate operational procedures once start-up has been successfully completed.
3. Description of normal operation and maintenance;
 - a. Description of tasks required for system operation;
 - b. Description of tasks required for system maintenance;
 - c. Description of prescribed treatment or operating conditions; and
 - d. Schedule showing the required frequency for each O&M task.
4. Description of potential operating problems;
 - a. Description and analysis of potential operating problems;
 - b. Sources of information regarding problems; and
 - c. Common remedies or anticipated corrective actions.
5. Description of routine monitoring and laboratory testing;
 - a. Description of monitoring including ground water, storm water surface water and sediment monitoring, tasks;
 - b. Description of required laboratory tests and their interpretation;
 - c. Required QA/QC; and

- d. Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
- 6. Description of alternate O&M;
 - a. Should system fail, alternate procedures to prevent undue hazard; and
 - b. Analysis of vulnerability and additional resource requirements should a failure occur.
- 7. Safety Plan;
 - a. Description of precautions to be taken and required health and safety equipment, etc., for site personnel protection, and
 - b. Safety tasks required in the event of systems failure.
- 8. Description of equipment;
 - a. Equipment identification;
 - b. Installation of monitoring components;
 - c. Maintenance of site equipment; and
 - d. Replacement schedule for equipment and installation components.
- 9. Records and reporting;
 - a. Daily operating logs;
 - b. Laboratory records;
 - c. Records of operating cost;
 - d. Mechanism for reporting emergencies;
 - e. Personnel and Maintenance Records; and
 - f. Monthly reports to State/Federal Agencies.

TASK IV - PERFORMANCE MONITORING

Performance monitoring shall be conducted to ensure that all Performance Standards are met.

A. Performance Standards Verification Plan

The purpose of the Performance Standards Verification Plan is to provide a mechanism to ensure that both short-term and long-term Performance Standards for the RA are met. The Settling Defendants shall submit the draft Performance Standards Verification Plan with the Preliminary Design, and the final plan with the Pre-Final/Final Design. If required, the plan will be modified following the completion of construction. Once accepted, the Settling Defendants shall implement the Performance Standards Verification Plan on the accepted schedule. The Performance Standards Verification Plan shall include:

1. The Performance Standards Verification Field Sampling and Analysis Plan that provides guidance for all field work by defining in detail the sampling and data gathering methods to be used. The Performance Standards Verification Field Sampling and Analysis Plan shall be written so that a field sampling team unfamiliar with the Site would be able to gather the samples and field information required.
2. The Performance Standards Verification Quality Assurance/Quality Control plan that describes the quality assurance and quality control protocols which will be followed in demonstrating compliance with Performance Standards.
3. Specification of those tasks to be performed by the Settling Defendants to demonstrate compliance with the Performance Standards and a schedule for the performance of these tasks.

TASK V - REPORTS

A. Progress Reports

The Settling Defendants shall provide EPA with signed monthly progress reports during the design and construction phases, and semi-annual progress reports for operation and maintenance activities. Progress reports shall be prepared in letter form in the following format:

PROGRESS REPORT

SITE NAME:
PREPARED BY:

REPRESENTING:

DATE:

REPORTING PERIOD:

PERCENT COMPLETED: A description and estimate of the percentage of the RD/RA completed;

- a. Progress Made This Reporting Period- Includes problem areas encountered, and recommendations.
- b. Anticipated Problem Areas and Recommended Solutions-Includes technical and scheduling implications.
- c. Problems Resolved- Includes results obtained relating to previously identified problem areas.
- d. Deliverables Submitted- Includes dates of completion; deliverables anticipated to be submitted with net report; reasons due dates for any future deliverable may need to be revised. Delays should be fully explained.
- e. Upcoming Events/Activities Planned- Includes field surveys, meetings, etc., and all major tasks to be performed within the net reporting period.
- f. Key Staffing Changes- Includes consultant, contractor or subcontractor personnel.
- g. Reports- Includes identification of daily reports, inspection reports, laboratory/monitoring data, etc., that are available for review if requested by EPA.